

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE,

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 510.—VOL. XV.]

LONDON: SATURDAY, MAY 31, 1845.

[PRICE {WITH A SUPPLEMENT} 6D.]

IMPORTANT SALE OF MINING SHARES.
Payable large Dividends, and presenting very eligible investments for capital.
R. C. WARTON begs to announce, that he is directed by the executrix of the late Henry Giffard, Esq., to SELL, BY AUCTION, at the Auction Mart, London, on Tuesday, the 10th of June, at Twelve o'clock, SHARES in the following important BRITISH MINES—viz., East Wheel Croft, Wheel Providence, Leant, Fowey Consols, Dolcoath, the Providence Mines, South Roskear, Hallenbeagle, Brewer, Wheel Henry, Wheel St. Cleer, Wheel Robina, Wheel Norris, Rose Consols, &c.; also several shares in Holmshush, Blencarnon, Tamar Consols, East Tamar, Stray Park, &c. Particulars are pressing, and may be had in due time, at the Auction Mart; at the Golden Lion Hotel, Liverpool; Pearce's Hotel, Truro and Penzance; and of Mr. C. Warton, auctioneer and estate agent, 38, Threadneedle-street.

VALUABLE SPACIOUS FREEHOLD WORKS OF THE
BRITISH WHITE LEAD COMPANY, AT BIRMINGHAM HEATH.—TO BE SOLD, BY AUCTION, by Mr. GIMBLETT, on Tuesday, the 10th day of June next, at the Union Inn, Union-street, Birmingham, at Four o'clock in the afternoon, subject to conditions then to be produced, all those substantial FREEHOLD WORKS, situated at Birmingham Heath, about a mile and a half from the centre of the town of Birmingham, consisting of spacious and lofty rooms or chambers, used as carbonating, washing, and drying-rooms; also store-rooms, laboratory, chimney stack, &c.; together with the excellent offices and manager's dwelling-house attached; also a smithy, stables, and extensive yard—the whole enclosed by a wall. There is also a frontage to the Old Birmingham Canal. The PLANT altogether occupies about 14 acres of land.
In the erection of the above buildings no expense has been spared, which are of superior construction, well arranged, and in complete repair, and capable of being used for any trade where extensive, lofty, and substantial premises are required. The opportunity now presented to the manufacturer and the capitalist is rarely to be met with.
There is in the works a STEAM-ENGINE, of 38-horse power, and extra boilers, together with the other MACHINERY, &c., lately used in the making of white lead, all of which are in perfect preservation, and will be offered, in the first instance, with the works, but in case they shall not be so sold, the works will then be offered without the machinery, &c.—For further particulars apply to Mr. John Howard Baker, solicitor, 13, Water-street; or to the auctioneer, 34, Cherry-street, both of Birmingham.

MONMOUTHSHIRE.
IMPORTANT TO IRONMASTERS, COAL MERCHANTS,
AND CAPITALISTS.—TO BE SOLD, BY AUCTION, by Mr. JOHN WILLIAMS, at the Clarence Inn, in Pontypool, on Thursday, the 12th day of June, 1845, at Two o'clock in the afternoon (subject to such conditions of sale as shall then be produced), all that valuable ESTATE, called by the name of "PEN Y TRANCE," situated in the parish of Treveltha, in the county of Monmouth, and containing by admeasurement 36 acres and 1 rood, chiefly arable and pasture land, with some coppice together with a good farmhouse and buildings, and two cottages thereon, producing the surface rent of £26. This estate abounds in minerals, both ironstone and coal, and there can be no doubt, from the result of the workings in neighbouring properties, that the following veins will be found therein—viz., the Sops Vein, Black Pins Mine, New Vein Coal, Droyed Vein Coal, Red Vein Coal, Yard Vein Coal, Meadow Vein Coal, Stone Vein Coal, Dryed Vein Mine, Meadow Vein Mine, Spotted Pin Mine, and the Bottom Vein Mine.
The property offers peculiar advantages, inasmuch as the veins may be worked either from the Cwm Nant ddu or from the Cwm Glyn Valley, and can be brought to market at a cheap rate, the estate being distant only about 600 yards from the Cwm Nant ddu tramroad, which joins the canal at Pontnewydd rolling-mill, and also within easy distance of the tramroad, leading from the bottom of Blaen y Cwm incline plane. The estate is copyhold of the Manor of Wentland and Bryngwyn.
For further particulars apply to Mr. William James, mineral surveyor, Trosant, Pontypool; or to the auctioneer; or to Messrs. Prothero and Towgood, solicitors, Newport.

BIRMINGHAM AND STAFFORDSHIRE.
COAL AND IRONSTONE MINES, FOUNDRIES,
FURNACES, WHARVES, WAREHOUSES, &c.—TO BE SOLD, BY AUCTION, by Mr. R. CORRETT, on Friday, the 13th day of June next, at Three o'clock in the afternoon, at the Swan Hotel, Wolverhampton, the very valuable MINERAL PROPERTIES belonging to the Birmingham Coal Company, situated at Darlaston, and the BLACK-ROUSE ESTATE, at West Bromwich; the FOUNDRIES AND FURNACES, &c., at Toll End, subject to a lease of the former for seven years, at £300 per annum; and their LEASEHOLD PROPERTY, consisting of WHARVES, WAREHOUSES, and GROUND BEATS, situated in Newhall and Lionel-streets, Birmingham, full particulars of which may be had of Mr. R. Corbett, solicitor, Messrs. Tyndall and Sons, solicitors; Mr. Lawrence, at the Birmingham Coal Company's Office, Birmingham; or the auctioneer, Bilston.

VALUABLE COAL AND IRONSTONE PROPERTY
FOR SALE, in the VALE OF NEATH, in the county of Glamorgan.—TO BE SOLD, BY PRIVATE CONTRACT, all those VALUABLE SEAMS, OR VEINS, OF IRONSTONE AND BITUMINOUS COAL, situated in the Vale of Neath, and known by the general description of the BLAENGWEACH COLLIERY, held under leases for the residue of three terms, of 99, 96, and 99 years, from the 25th March, 1831. The possessor of the lease is entitled to be supplied with anthracite or stone coal, for the use of any iron furnaces to be erected on the premises, at the cost of 3s. 4d. per ton delivered.
The property is contiguous to the North Canal, which affords an easy and cheap means of transit to the port, and which is distant from the property about nine miles. The shipping rent and royalties are low, and altogether the property, from peculiar circumstances attached to its locality, affords an almost unrivalled site for the erection of iron-works or for an extensive colliery. The proposed South Wales Railway is intended to pass within a few miles of the property.—For further particulars apply to Messrs. Tilson and Squares, solicitors, Coleman-street, London.

A COLLIERY, producing a PROFIT of upwards of TWENTY
PER CENT., and which, with a very moderate outlay, will yield 50 per cent., is
now FOR SALE.—Particulars may be had on application to Messrs. Reed and Robinson, 9, Adam-street, Adelphi.

CASE & MORRIS, TAR AND NAPHTHA DISTILLERS,
NAVAL VARNISH AND PATENT FUEL MANUFACTURERS,
70, YARLHAM-ROAD, and 46, CARRUTHERS-STREET, LIVERPOOL.
As a coating for hulls, bottoms, sides, and launchers, this varnish is superior to paint; and as a protective application to iron exposed to water it is unequalled.—Estate agents, railway managers, colliery and mine agents, ironfounders, iron shipbuilders, and flat and shipowners, will find this varnish preferable to paint for all ordinary purposes, and greatly more economical; dries in half an hour.—One Shilling per gallon.
An inferior kind of Black Varnish, for paying vessels' sides and wood roofs, and as a waterproofing for brickmakers' weather boards, &c., is also sold.
These varnishes are manufactured on the spot, and are of the original make.
RED AND BROWN VARNISH, Two Shillings per gallon.
REFINED COAL TAR, Threepence per gallon.
COAL PITCH, in barrels or bulk. Coal tar and coal pitch make a composition which, applied to dock and lock gates and the piles of timber piers, effectually resists the attacks of marine insects. For application to timber work, refined coal tar and coal pitch are quite equal to the best foreign tar and pitch.
FINEST RECTIFIED COAL OIL, MINERAL NAPHTHA.
Caution.—Much of the varnish sold under the denomination of Asphaltum Varnish and Black Varnish, is nothing more than coal tar, and often unrefined, raw coal tar, which is rapidly destructive of both wood and iron.

ALTO DOURO RAILWAY.
Capital 6000 contos of reis (£1,350,000), in 60,000 shares, of 100 milreis (£22 10s.) each.—Deposit 6 milreis (£1 7s.) per share.
Engineers—William Gravatt, Esq., F.R.S.
This line will commence near the city of Oporto, and continuing through Lamego, will traverse the very heart of the great wine district of Portugal to Torre de Moncorvo within a few miles of the Spanish frontier. The manifest advantages of this line render comment almost unnecessary. Preliminary surveys have established the fact that there are no engineering difficulties of importance to overcome, and the traffic of the country is even now so great that no reasonable doubt can exist as to the incentive nature of this investment. The improved state of affairs in the Peninsula will eventually insure the extension of this line to the ancient and populous city of Salamanca, and the very heart of Spain. It is difficult to estimate the beneficial results of the completion of such a line. An immense district of the most fertile country in Europe will be brought into immediate contact with the sea-coast, and thence, by consequence, with England and all the maritime nations of the world.
The provisional committee avail themselves of the earliest possible opportunity to apprise the public, that such legal measures will be adopted as must afford the subscribers this company ample protection.
In consequence of the negotiation now pending, the prospectuses are unavoidably delayed a few days. In the mean time, forms of application may be had at the offices of the company, 99, Gracechurch-street; at the solicitors, Messrs. Mayhew and Sons, 26, Carey-street, Lincoln's Inn; and of the following agents:—Messrs. Beaumont and Langworthy, Exeter; Luke Arnold, Esq., Bristol; Thomas Boardman, Esq., Exeter; S. H. Armistead, Esq., Wakefield; W. H. Collis, Esq., Birmingham; C. Cutler, Esq., Wakefield; S. H. Blackburn, Esq., William Fortescue, Esq., Newcastle-upon-Tyne; Messrs. Tate and Nairn, Bristol; John Thomas Holland, Esq., Coventry; and Henry Bellingham, Esq., Wakefield; John Wade, Esq., Birmingham; J. Bannister, Esq., Exeter; James Stokes, Esq., Cheltenham; Messrs. R. B. Watson and Co., Leeds; Messrs. Duncan and Hutchinson, Glasgow; James Fringle, Esq., Edinburgh; R. F. Head, Esq., Exeter; Messrs. Collinson and Flint, Hull; William Mason, Esq., Bradford, Yorkshire; Messrs. J. R. Mann and Co., Norwich; Messrs. Foulds and Cockburn, Glasgow; Messrs. Thomas Munro and Co., Edinburgh; Thomas Miller, Esq., Edinburgh; Thomas Crawford, Esq., Liverpool; John Davis, Esq., Liverpool; John Ellis, Esq., Falmouth; James Jamieson, Esq., Leeds; Thomas Cornfield, Esq., Penryn; Messrs. T. Cardwell and Sons, Manchester; C. F. Gower, Esq., Ipswich; A. Laurie, Esq., Liverpool; Joseph Clarke, Jun., Esq., Southampton; Messrs. Boyle, Low, Finn, and Co., Dublin; J. F. Bealmalick, Esq., Truro; George Miller, Esq., Liverpool; S. Grindrod, Esq., Manchester; William Cronheim, Esq., Halifax; Wm. Gordon, Esq., Aberdeen; Messrs. Herring and Andrews, Weymouth; and Messrs. Stone and Simons, Dorchester.
By order, T. M. RUSSELL, Sec.

ANGLO-MEXICAN MINT COMPANY, 5, Broad-street-
buildings, London, May 26, 1845.—Notice is hereby given, that a DIVIDEND will be PAYABLE at the office as above daily, on and after Monday, the 3d of June next. Claims to be made three clear days previous to payment, printed forms of which are to be obtained at the office.—Hours of attendance from Eleven to Three.
G. B. LONSDALE, Secretary.

MEXICAN AND SOUTH AMERICAN COMPANY,
10, New Broad-street Mews, May 26, 1845.—THE TENTH ANNUAL GENERAL MEETING of the proprietors of shares in the Mexican and South American Company will be HELD at the office of the Anglo-Mexican Mint Company, No. 5, Broad-street-buildings, on Wednesday, the 11th day of June next, at One o'clock precisely. At this meeting a director will be elected, in the place of John Schneider, Esq., who retires by rotation, but is eligible to be re-elected.
H. W. SCHNEIDER, Managing Director.

OFFICE OF THE COLOMBIAN MINING ASSOCIATION,
13, Austin Friars, London, May 29, 1845.—THE TWENTIETH ANNUAL GENERAL MEETING of the proprietors of the Colombian Mining Association will be HELD at the office of the association, 13, Austin Friars, on Thursday, the 19th June next, at Two o'clock precisely.
By order of the board of directors, L. R. JONES, Secretary.

ST. JOHN DEL REY MINING COMPANY.—Notice is hereby given, that the SIXTH HALF-YEARLY DIVIDEND, being TWELVE SHILLINGS and SIXPENCE per share, on the shares in this company, will be PAID at this office, on Thursday, the 5th June next, and any succeeding day, between the hours of Ten and Four.—Forms for claiming the dividend may be obtained at the company's office, and must be left three clear days for examination previous to payment.
8, Tokenhouse-yard, Lothbury, May 30. GEO. D. KEOGH, Sec.

UNITED MEXICAN MINING ASSOCIATION.—Notice is hereby given, that a SPECIAL GENERAL MEETING of proprietors of this association will be HELD at the London Tavern, Bishopsgate-street, on Wednesday, the 25th June next, at One o'clock precisely, for the purpose of passing resolutions, prepared under the advice of counsel, for altering certain clauses of the Deed of Settlement relative to the payment of dividends, so as to authorize the directors to make such payments whenever, and at all times, when they may be in possession of funds sufficient for the purpose; and which resolutions, if passed, will be submitted for confirmation at the usual Half-yearly General Meeting, on the 30th July next; and the directors intend to recommend a dividend at the rate of 8s. per share.
By order of a court of directors, JOHN MATHER, Sec.
8, Great Winchester-street, London, May 29, 1845.

FOR SALE, BY PRIVATE CONTRACT, at the ROYAL
POLBEROU CONSOLS MINES, in the parish of St. Agnes, TWO WATER-
WHEELS, each of 30-feet diameter, 34-feet breast, with oak rings, cast-iron axles and sockets, made on the mines, of the best materials, and nearly new; cast-iron stamps, axles, with solid, canvas, and bearings for 32-heads, together with covers, frames, lifters, heads, and everything complete. Also a 24-inch LIFT, comprising stuffing-box and gland, plunger-pole and case, door and H-pieces, and 11 fathoms of 24-inch pumps. All the above are very little worn for wear, and will be sold on reasonable terms.
For particulars apply to C. K. Vigers, Esq., Truro; or to the agents on the mines.
Dated May 27, 1845.

BLACK JACK WANTED.—PARTIES having BLACK
JACK to DISPOSE OF, may hear of a PURCHASE, by applying to Mr. S. S. Dupen, of Hayle, who is ready to treat for any quantity, if good.
N.B.—No connection with any other parties now purchasing in the county.—The JACK must be clean, good quality, and sold by sample.

IMPORTANT TO MINERALOGISTS.—TO BE SOLD, BY
TENDER, several SPECIMENS of PURE MURIATE OF SILVER, considered to be the finest ever seen in England, lately discovered in Wheal Mead, near Callington, in the county of Cornwall.—For particulars apply to Mr. W. May, Newport, near Llanneven.

TO MINERS AND ENGINEERS.—ON SALE, TWO
NEW CAST-IRON PUMPS, 12-inch bore by 5-feet stroke, with the necessary buckets, clacks, wheel shafts, cranks, quadrants, pipes, rods and bolts, for working two lifts in a mine—about 180 feet each lift; the pipes are 4-feet long, and 13-inch bore, of wrought iron, about 1-inch thick; also a new cylindrical BOILER, in plates, 20 feet long by 7 feet diameter, with the necessary pipes and furnace-bars. The whole can be delivered immediately, and may be sold in separate lots.—For further particulars apply to A. W. Powles and Co., 4, Water-street, Liverpool.

TO ASSAYERS, LEAD SMELTERS, MINERS, &c.
WANTED, to proceed to SPAIN IMMEDIATELY, a PERSON capable of taking CHARGE of WORKS for the SMELTING and REFINING of SILVER-LEAD ORES, ASSAYING, &c. None but persons who have been practically engaged in these branches in this country need apply.—Applications, terms, and testimonials, to be addressed to "X. Y. Z.," 8, Adam-street, Adelphi, London. Also a good PRACTICAL MINER, capable of SELECTING ORES, and possessing some knowledge of ASSAYING.

TO CAPITALISTS.—WANTED, a MONIED PARTNER,
to CARRY INTO OPERATION the MANUFACTURE of an IMPORTANT INVENTION of a ROTARY ENGINE, applicable to locomotive, stationary, and marine purposes, and well arranged as an application to a screw propeller—being a powerful, regular, and steady motion, and can be worked as a high-pressure or condensing engine, and portable. Also FOR SALE, or made available to the above concern, a PATENT for IMPROVEMENTS in SHIP WINDLASSES and WINCHES. (This will be a desirable opportunity any person engaged in the shipping business, as the inventor has a thorough practical knowledge of the different branches in steam-engine and machine making, and would not object to a foreign engagement. Most satisfactory reference can be given.
Address (if by letter, post-paid) Mr. James Anderson, 2, New-street, City-road, London.

TO IRONMASTERS, &c.—WANTED, a SITUATION as
FORGE and MILL MANAGER. The advertiser is forty-five years of age, has had thirty years' experience in the iron trade—is perfectly acquainted with the manufacture of iron, from the pig into all the various forms that iron is generally manufactured, either by the puddling or rolling process—viz., merchant iron of all descriptions, railway iron, boat iron, angle iron, boiler plates, sheet-iron, spike iron, and slitting iron; also large shafts, cross-heads, cranks, piston-rods, connecting-rods, &c., for land and marine engines. Can erect the furnaces, rolls, hammers, and all out machinery requisite for the above work. Unexceptionable references can be given.—Address (post-paid) to "L.," at the office of the Mining Journal, Railway and Commercial Gazette, 26, Fleet-st., London.

TO ENGINEERS AND CONTRACTORS.—WANTED a
SITUATION, a PERSON that has been accustomed to FIXING and WORKING of STEAM-ENGINES for PUMPING, the FIXING of PUMPS, SINKING of SHAFTS, and TUNNELING.—Address (post-paid) "M. D.," at Mr. R. Demmett's, No. 10, Barbican Churchyard, Great Tower-street, London.

TO ENGINEERS AND IRONFOUNDERS.—WANTED,
in an extensive and old-established ironfoundry, where there is a good connection and but little competition, a PRACTICAL MAN, as MANAGING PARTNER.—Apply (post-paid) to "A. P.," care of the Editor of the Mining Journal, Railway and Commercial Gazette, 26, Fleet-st., London.

TENDERS may be FORWARDED to me, on or before the
14th proximo, for SUPPLYING the following MINES, for TWELVE MONTHS, from Midsummer next, with ENGINE COALS, of best quality, and with NORWAY TIMBER, half Drahm and half Longwood, of good quality and average lengths; both articles to be delivered at the respective mines free of expense, in such quantities as may be required, and when required—viz.:
Probable Quantity of Coals required. Probable Quantity of Timber required.
Mines. Time 1200 Loads 300
West Caradon 200 100
Gonnamore 200 100
Tokenbury 300 100
Craddock Moor 200 30
Wheal Sisters 350 40
Yealand Consols 20 90
Total Tons 2970 Loads 715

Should the agents not approve of the quality of any articles sent in, the parties supplying will be required to remove the same, and, at the option of the respective adventurers, either to replace them by other materials of approved quality, or to submit to a deduction from their bills of the amount of difference between the contract prices and those at which the articles may be purchased by the adventurers from other parties; also, the amount of the difference will be deducted from the contractors' bills in respect of all materials purchased elsewhere by the adventurers, in consequence of the contractors not sending in the materials when and as required.
Likard, 15th of Fifth Month (May), 1845. EDWD. A. CROUCH.

STEAM-ENGINE WANTED, BY TENDER.—WANTED
IMMEDIATELY, on WHEAL CONCORD MINE, in the parish of South Sydenham, in the county of Devon, a STEAM-ENGINE, on the most approved principle of a 36-inch cylinder. Engineers and other persons desirous of supplying the said engine, and erecting the same, are requested to send their tenders (free of expense) to Mr. G. W. Snell, solicitor, Callington, on or before the 8th day of June next, stating the lowest price, including all expenses and engineer's fees, with the terms of payment, of providing, erecting, and fixing such an engine, with boiler complete, on the said mine, and within the time the same would be done.—Dated May 19, 1845.

STEAM-ENGINES, from 8 to 10-horse power, ALWAYS in
STOCK.—Apply to Mr. Capper, engineer and foundryman, Birmingham.
Price, from £115 to £135 per horse.
N.B.—CASTINGS AND FIT WORK MADE TO ORDER.

WAITE AND WARDLE, STOCK AND SHARE BROKERS,
8, GREEK-STREET, PARK-ROW, LEEDS.

MR. W. FORDYCE, SHAREBROKER, 15, GREY-STREET,
NEWCASTLE-ON-TYNE.

RYE AND THOMAS, MINE AGENTS AND DEALERS
IN STOCKS, RAILWAY AND OTHER SHARES,
80, OLD BROAD-STREET, LONDON.

JONATHAN DREWRY, SHAREBROKER, NEWCASTLE-
UPON-TYNE, informs his friends that he has made arrangements with Thomas Richardson (for many years cashier in the old established banking-house of Lambton and Co., in this town) to become his PARTNER; and he trusts, in doing so, his friends will readily perceive that it will enable them to receive the advantage of the utmost promptness to the instructions with which they may favour the new firm.
J. DREWRY begs to express his sincere thanks to his numerous friends for the confidence they have reposed in him for so many years, and the favours he has so largely received from them. From this day the business will be carried on under the firm of "DREWRY and RICHARDSON," who, in soliciting a continuance of the favours conferred on JONATHAN DREWRY, beg to assure all those who may oblige them with their instructions, that the firm's best exertions will at all times be used for their interest.
92, Side, Newcastle-upon-Tyne, 5th Month 26, 1845.

WILLIAM FOX, METAL BROKER, No. 53, CASTLE-
STREET, LIVERPOOL, OFFERS his SERVICES to PURCHASERS or SELLERS of RAILWAY BARS, FIG-IRON of every quality, BAR, and other descriptions of iron. From his knowledge of the trade and extensive connection, he is enabled at all times to place any one favouring him with their commands in the best possible position.

DUFFERY LLYNVI AND PORTH CAWL RAILWAY.
Notice is hereby given, that the ANNUAL GENERAL MEETING of the proprietors of this company is intended to be HELD at the Wyndham Arms, Bridgend, Glamorganshire, on Monday, the 2d of June next, at One o'clock precisely, agreeably to the company's Act of Parliament, 6th Geo. IV., cap. 104. By order of the committee, W. S. BRADLEY, Clerk.
Porth Cawl, May 24, 1845.

WESTERN JAMAICA CONNECTING RAILWAY,
FROM OLD HARBOUR TO SAVANNAH-LA-MAR AND MONTEGO BAY.
Capital £1,000,000, in 40,000 shares of £25 each.—Deposit £1 7s. 6d. per share (A portion to be reserved for Jamaica).

PROVISIONAL COMMITTEE.
Sir W. B. Johnston, Bart. Hilton, Aberdeenshire
S. B. Bruce, Esq. Ripon, Yorkshire
S. Graham, Esq. Ballagran, Strlingshire, late stipendiary magistrate of Jamaica
John Hawley Cooke, Esq. of Shrewsbury
C. Macdonnell, Esq. Edinburgh
R. Clements, Esq. Tonbridge Wells
Richard Carpenter, Esq. Lonsdale-square, a director in the Leicester and Bedford Railway
Adam Murray, Esq. Craven-street, Strand
G. Lawton, Esq. George-street, Hanover-square
L. Stephens Lyne, Esq. Threadneedle-street
J. W. Gudge, Esq. Burton-street, Belgrave-square
(With power to add to their number.)
ENGINEERS—N. F. DODD, Esq.; M. D. STOKES, Esq.
BANKERS—London and Westminster Bank
STANDING COUNSEL—W. BURGE, Esq. Queen's Counsel.
SOLICITORS.
Messrs. Reed and Robinson, 9, Adam-street, Adelphi, London.
Messrs. Barnett, M'Neil, and Co., Jamaica.

SECRETARY (pro tem)—C. Robinson, Esq.
The island of Jamaica is the largest and most valuable of our West India possessions; it extends, from east to west, 160 miles, and its mean breadth is about forty. It is rich in copper, iron, lead, and other minerals; coal abounds in various districts, and its soil and climate are most fertile and luxuriant, producing spontaneously almost every description of vegetation. The chief articles of commerce are sugar, rum, coffee, ginger, pimento, and woods of various sorts; and these the island produces in great abundance and of the first quality. Notwithstanding, however, all these natural advantages, its resources have, as yet, been only very partially developed, not more than one-third of the land having been brought into cultivation, and its mineral wealth wholly neglected, owing to the want of good roads, and the enormous expense of land carriage.

Impressed with the important results necessarily consequent on the removal of these disadvantages, and at the instance of many influential proprietors of the island, this company has been projected for the purpose of constructing a railway along the southern coast, to Savannah-la-Mar, and thence across the western extremity of the island to Montego Bay, thus connecting these two, and other important ports, with Old Harbour, Spanish Town, and Kingston.

The whole length of the line will be about 130 miles, and it will traverse the most populous and important districts of the island.
By the present mode of transit, the immense produce of the interior is conveyed to the nearest ports, at an expense frequently exceeding the entire freight to England, and even then, before its shipment to this country, it is often subjected to the further cost and delay of sending it to Kingston by small vessels, called droghers, at great risk, in consequence of the badness of the harbours, and the dangerous nature of the navigation. Moreover, the expense, at present, to an individual in travelling from Kingston to Montego Bay, exceeds £40, and the journey occupies at least four days; whereas, by the proposed railway, the same journey will be performed in about six hours, and at a trifling cost; while the conveyance of produce, both as to time and expense, will be diminished in an equal ratio. The country to be traversed is highly favourable for such an undertaking, and no engineering difficulties intervene; it is therefore to be confidently assumed that the cost of the line will not exceed the estimate given.

From a careful calculation of the present traffic, based on official returns, both as regards produce and passengers, between the several places on, and contiguous to, the projected line and Kingston, it is clear that the net revenue must yield a very large percentage on the capital to be embarked. In further confirmation of this, it is only necessary to refer to the facility with which the shares in the line from Kingston to Spanish Town are sought after, at a premium even of £20.
When, however, all the advantages which must necessarily flow from the completion of such a line, in a country like Jamaica, are fully considered; looking at the impetus it will give to commerce, the additional land it will bring into cultivation, the great increase of intercourse and civilization which must follow, the value it will add to adjacent estates, and to property generally in the island, the undertaking cannot be regarded otherwise than as the most important railway hitherto projected, whether viewed as a great national benefit, or as a safe commercial investment.

The directors propose to apply to the Legislative Assembly for an Act to empower them to carry into operation the objects of the company, in which the usual provision will be inserted to protect the subscribers from all liability, beyond the amount of their subscription. It is proposed that the present railway shall commence at Old Harbour, at the terminus of the intended line from Spanish Town to the former place, and traverse the intervening districts to the important town of St. John Savannah, on the Milk River, and thence along the banks to Bath; it will then proceed by Woodlands and Black River, to Savannah-la-Mar, and, after crossing the western extremity of the island, terminate at the large and flourishing town and port of Montego Bay. From St. John Savannah it is intended to construct a branch road of a single line to Mandeville and Oxford, and another from Woodlands to Alligator Pond, thus affording the rich and numerous sugar and coffee plantations in these districts the benefit of railroad communication.

ESTIMATE OF TRAFFIC AND REVENUE.
The Custom House returns show the yearly shipment of produce or merchandise, between Jamaica and England, to be about 120,000 tons; then, taking its exports and imports to and from all other places, together with all internal traffic, at only 50,000, the gross tonnage will be 190,000. Of this, it is calculated, about one-half will be brought on the proposed line, but say a third only, or 60,000, at 10s. per ton per mile (as allowed by the late Act), and that the average carriage be only fifty miles, the returns will be £121,250
It is also estimated that 100,000 passengers will travel yearly by the intended line, at an average fare of £3 for the whole distance; but, supposing only half that number, at an average fare of but £2 each, the returns will be 100,000
Then allowing for the Government contract for mails, only 10,000

The gross yearly returns will be £241,250
Deduct expenses of working the line, say 40 per cent. 96,500
Net revenue (being over 14 per cent. on the capital) £144,750

This calculation, however, being based upon the present returns only, is obviously insufficient; as from all experience in similar undertakings, it may fairly be inferred that the traffic will be more than doubled by the facilities to be afforded by the proposed railway, and that the returns, therefore, will be increased in proportion.
Applications for shares may be made to the secretary, at the company's office, 10, Old Jewry Chambers, City; to the solicitors; and to the following stockbrokers:—Messrs. Martin and Heseltine, Finch-lane, London; Green and Oldham, Manchester; Schroeder and Ashlin, Liverpool; Heycock and Powell, and Walker and Williamson, Leeds; Thomas May and Co., Exeter; Joseph Clark, Southampton; Francis Stamp, Hull; Thos. F. Dickinson, Newcastle-upon-Tyne; Samuel Clark and Andrew Moffatt, Edinburgh; Black and Lottner, Glasgow; Boyle, Low, Finn, and Co., Dublin; Luke Arnold, Bristol; C. Foster, Cork; James Ross, Perth; F. C. Spenser, Halifax; and Jackson S. Stevenson, Belfast.

JAMAICA CONNECTING RAILWAY.—The public are respectfully informed, that the provisional committee having thought it advisable to add the word "WESTERN" to the title of this undertaking, the applications, therefore, previously received will be deemed as applying to the WESTERN JAMAICA CONNECTING RAILWAY, and will be so considered in the allotment.
REED and ROBINSON, 9, Adam-street, Adelphi.

RAILWAY EXPENSES AND INVESTMENTS.—Few persons are aware of the enormous expenses attending the prosecution of a railway bill through the several stages in committee and the Houses of Parliament; the contest between the Northumberland atmospheric line and the Newcastle and Berwick is supposed to have cost 50,000*l.* In some of the committees the fees and expenses fall little short of from 1000*l.* to 1200*l.* per day, and these sitting from ten days to five or six weeks upon the merits of one railway swell the preliminary outlay to a most fearful amount. The House of Commons, having found itself quite incompetent to investigate these cases, deputed the business to committees, who were supposed fully capable of arriving at conclusions the most advantageous to the public, and hence it has been rare that a bill be carried up to the House, after the decision of the committee against it, it meets with a favourable reception; so that a bill, having once passed through this severe ordeal, is considered safe, and the parties interested in possession of all they asked. Such apparent anomaly has, however, been exhibited, and we see no reason why the House should not have reserved to itself the undoubted right of reversing a decision, which may have been founded on erroneous premises, or by a committee found to have been incompetent—indeed, it is to the public interest that such should be the case. These enormous preliminary expenses, of course, form an imposing feature in railway investments, which in British lines now in course of working is somewhat about 60,000,000*l.*—an almost astounding sum at first sight, but it may be considered as sunk in solid, enduring, and interest-paying works. 121,000,000*l.* has been either risked or lost in foreign loans; upwards of 6,000,000*l.* have been expended, it is feared, never to be recovered, in foreign mines; and millions are now being speculated with upon foreign railroads, many of which are no doubt legitimate. But this 60,000,000*l.* is a safe national investment, has provided labour for thousands; given a stimulus to trade and commerce before unknown; altered our former notions of time and distance; and paying to the shareholders, upon an average, about 2 per cent. more than Government securities. There has been also 4,500,000*l.* invested in British mines, of which a very large sum is absolutely lost to the investors, making with the above the astounding amount of 130,000,000*l.*, which has changed hands, without return to the original holders, in the space of comparatively a few years. No such unfortunate results can for a moment be contemplated as likely to take place with regard to the sixty millions sterling invested in our established railroads.

CENTRAL OF SPAIN RAILWAY.—A deputation from the committee of this railway of the following gentlemen—E. Turst Carver, Esq. (deputy-chairman), W. P. Andrew, Esq., H. Garrett Key, Esq., Colonel C. Ramsey Skardon, attended by their secretary, Thomas Harvey, Esq.—had an interview, on Friday, the 30th inst., by appointment, with his Excellency the Duke of Sotomayor, &c., &c., the Ambassador from the court of Spain, at his residence, Cavendish-square. The concession, by Royal authority, of this line of railway having been received by the committee on the previous day, was submitted for his Excellency's recognition, and duly authenticated by him.

PROJECTED RAILWAYS.—BROAD AND NARROW GAUGE.—The contest which is now going on in Parliament between the advocates of these two principles of construction of railways—and which appears likely to be a severe one—is now become of real national importance, and occasions an interest commensurate therewith. The question now arises, whether Mr. Brunel's innovation on previous railway engineering shall be extended into the northern districts, or confined to its present western localities; and the sanction of Parliament to the adoption of the proposed extension of the London and Birmingham Company's line to Worcester and Wolverhampton, or that of the Great Western, for branches proceeding northwards, will decide it. It appears that there are 333 miles of railroad on the broad gauge now in regular working, and 600 more proposed to be constructed, while of the 4 ft. 8½ inch, or what may be termed the *narrow gauge*, there are 1530 miles, and proposed to be constructed 1264—making a total of 2794 miles, and extending over the most important towns and districts in the kingdom. At the time of constructing the Great Western line, it is probable the general connection of railways with each other was hardly contemplated, and the universal adoption of a uniform gauge not considered of that importance it has since proved to be. Where the Bristol and Gloucester Railway (which is a broad gauge) joins the London and Birmingham, great difficulties, inconveniences, and delays, are experienced in the transfer of passengers and goods from one to the other, and should the two principles clash in various localities, these difficulties must be greatly increased. Mr. Brunel, having long had his attention directed to the best means of removing the evil, has at length perfected a machine for lifting a train carriage of any description, and transferring it bodily, in a few minutes, from the broad to the narrow line, or *vice versa*. It consists of a powerful hydraulic apparatus, in a building, fifty-five feet in height, supported on a strong brick arch, beneath which runs a branch from each of the roads, of different widths; above are the cylinders, levers, and wheels, which work the apparatus, and four strong hooks, with chains, connected with the machine, are attached to eyes in the four corners of the carriage, which can thus be transported with ease and safety. General Pasley, the inspector of railways, has viewed and approved the plan, and should it be considered that this serious difficulty is removed, the question before the public becomes simplified, confining itself to a pounds, shillings, and pence view of the subject—the difference in the cost of the broad over the narrow gauge being 6½ per cent. in earthwork, and 7 per cent. in the purchase of land, with a larger expenditure in the construction of the carriages, &c., and with increased weight; to counterbalance which, Mr. Brunel contends that it provides a more rapid, safe, regular, and luxurious mode of transit, and is, in every respect, superior. The machinery for testing this invention is erected at the Paddington terminus of the Great Western Railway, and excites considerable interest with the advocates of the two systems.

CONSUMPTION OF SMOKE.—We were invited to inspect on Thursday last a perfectly new arrangement in the construction of the furnace of the steam-engine attached to Walker's Saw-Mills, Belvidere-road, Lambeth, by which a perfect combustion of the fuel is effected, and the invisible and unconsumable gases arising therefrom, alone escape through the chimney, except just at firing up, when a slight smoke is seen for about one minute. This furnace chimney, it is said, emitted more dense volumes of black smoke than any in the neighbourhood, and the agreeable alteration has been effected by Messrs. Chanter and Co., by a judicious combination of several of their previously patented improvements, with an entire new plan of directing the current of air upon the bridge. In the first place, the moveable bars are either worked by a very slow, but regular, motion attached to the engine, or at intervals by hand; in place of a common guard plate to the furnace-door, an iron plate is fixed in such manner as to form a box, projecting about four inches at bottom, and tapering to an inch at top, closed on all sides except the top, where there is an opening its whole length, and about half an inch wide; the door is pierced with holes, and as this box is always at a high temperature, the air which passes through them and the opening enters the furnace in a heated and expanded state. As the extremity of the ash-pit is a door or valve for the admission of air to that part of the furnace immediately behind the bridge; to this valve is fixed a lever, connected with the furnace-door, in such manner, that, on opening the latter to any extent, the valve is opened or closed accordingly, and the quantity of air regulated to the greatest nicety. After entering this opening beneath the furnace, the air impinges against a plane of brickwork placed at an angle of about 30 deg., it then passes south, and, ascending in a zigzag direction over heated brickwork, chamber under the back of the boiler, from whence it is carried over an inverted arch, passing downwards, causing the smoke to mix with the ignited gases over the bridge, and the oxygen of which, uniting with the unconsumed carbon, the latter immediately enters into a state of combustion, and passes off as carbonic acid. It is the arrangement of this chamber and inverted arch, and the self-acting regulation of the air-valve, which are the subject of the present patent—we believe the thirteenth Mr. Chanter has obtained. The moveable bars keep the fire clear and free from clinker, and by the action of the lever attached to the furnace-door, just sufficient air is admitted, when a rush takes place in front of the furnace. Upon the whole, the arrangements appear to be as completely successful as anything we have yet witnessed, a light mist being all that escapes the chimney, and forming a strong contrast with its begrimed neighbours, some of which roll forth absolute clouds of solid blackness.

PROVIDENT CLERKS' ASSOCIATION.—We are happy to hear, that since the dinner, on Wednesday last, the East and West India Dock Company have contributed 100*l.* to this institution, and intimated to their clerks, that their becoming members of the association will be favourably thought of by the court of directors.

WEXFORD, WATERFORD AND VALENTIA RAILWAY,

TO JOIN THE WATERFORD, LIMERICK, AND CORK RAILWAYS.
Provisionally Registered, pursuant to 7th and 8th Victoria, cap. 110.

Capital, £1,250,000, in 50,000 shares of £25 each; deposit, £1 7s. 6d. per share.

PROVISIONAL COMMITTEE.
Right Hon. the Earl of Kingston, Mitchelstown Castle, Cork.
Right Hon. the Lord Mashery, Springfield Castle, Limerick.
Sir Robert Fitz-Wygram, Bart., Connaught-place, Hyde-park.
John Nunn, Esq., Silversprings, Wexford.
Robert Hughes, Esq., Ely-house, Wexford.
The McGillicuddy, Whitefield, Killybeggy.
Rev. Richard King, Woodville.
Sir Edward Cholmeley Dering, Bart., Surrenden Dering, Kent.
William Richardson, Esq., Charlotte-street, Bedford-square.
I. Leveson Gower Ward, Esq., Lincoln's Inn.
T. Miller, jun. Esq., Albion-street, Wexford.
Richard Goff, Esq., Tottenham-green, Wexford.
Colonel William P. Pigott, Slevoey Castle, Wexford.
Francis Leigh, Esq., Magistrate, Rosegarland, Wexford.
Eyre Evans, Esq., Magistrate, Ash-hill Towers, Limerick.
Standish Henry Harrison, Esq., Castle Harrison, Charleville.
Daniel Clancy, Esq., Charleville.
Thomas G. Armstrong, Esq., Roscommon, Clonsilla.
Captain C. C. Mansergh, Longmeade, Wexford.
Walter Hore, Esq., Harpistown, Wexford.
Patrick Trant, Esq., County Magistrate, Waterville, Caheriveen.
Samuel Handly, Esq., Merchant, New Ross.
Ambrose Miller, Esq., Merchant, Thames-street.
Captain W. Toole, County Magistrate, Curacao.
Rev. G. E. Fitz-Wygram, Bart., Wexford.
David Beatty, Esq., Penance, Wexford.
W. H. Kellott, Esq., Great Clonard, Wexford.
R. Atkins Rogers, Esq., Magistrate, Director of the Cork and Passage Railway.
Henry R. Harvey, Esq., Magistrate, Kyle House, Wexford.
Richard Clayton Browne Clayton, Esq., Adlington Hall, Wigan, and
Colonel Wilson, Roseville, Wexford.
Martin Howlett, Esq., Magistrate, New Ross.
George Harrick, Esq., Merchant, New Ross.
Rev. Henry Holahan, Rosheron Glebe, Kilkenny.
Wm. Campbell, Esq., Great Portlough-street.
Samuel Kough, Esq., Merchant, New Ross.
John Preston, Esq., Rosheron Tower, Kilkenny.
Rev. G. E. Armstrong, Listerin Glebe, Kilkenny.
Edward Rae, Esq., Magistrate, Keel, Miltoot.
(With power to add to their number.)

BANKERS.—Messrs. Smith, Payne, and Smith, London; London and County Bank, London; and the Manchester and Liverpool District Bank, Liverpool; the Bank of Ireland, and the Provincial Bank of Ireland, and their Branches.

ENGINEER-IN-CHIEF.—William Gravatt, Esq., F.R.S.

ACTING ENGINEER.—Robert McCall, Esq., C.E.

SOLICITORS.—Messrs. Stevens, Wilkinson, and Satchell, Queen-street, London; John Symons, Esq., 33, Old Jewry, London; William B. West, Esq., Wexford.

GRAND UNION RAILWAY—COMMENCING AT NOTTINGHAM,

AND EXTENDING BY GRANTHAM, FALKINGHAM, SPALDING, HOLBEACH, LONG SUTTON, AND SUTTON-BRIDGE, TO KING'S LYNN, IN NORFOLK.

Provisionally registered, pursuant to 7 and 8 Victoria, cap. 110.

Capital £1,500,000, in 60,000 shares, of £25 each.—Deposit £1 10s. per share.

THE RIGHT WORSHIPFUL THE MAYOR OF NOTTINGHAM.

William Gibson, Esq., Jonathan Burton, Esq.,
Frederick Plant, Esq., Henry Smyth, Esq.,
Mr. Thomas Gee.

PROVISIONAL COMMITTEE.
The Rt. Hon. Lord Ranelagh, Bunbury Park.
Sir Wm. Earle Worsley, Denton Hall.
Sir M. J. Cholmeley, Bart., Easton Hall.
Glynne Earle Welby, Esq., M.P. Newton Hall.
Thos. Gibson, Esq., M.P. chairman of the
Manchester and Buxton Railway Co.
Charles Henry Bertie, Esq., Godney Marsh.
Richard Peale, Esq., Long Sutton.
Charles Brewster Taylor, Esq., Luton.
Derby, Esq., Nottingham.
George Peel, Esq., Manchester.
The Mayor of Nottingham.
R. S. Hutchinson, Esq., M.D., Nottingham.
Edward Munk, Esq., Nottingham Park.
William Gibson, Esq., Nottingham.
Frederick Plant, Esq., Nottingham.
Thos. Wakenfield, Esq., Nottingham.
Henry Smyth, Esq., Nottingham Park.
Francis Wakenfield, Esq., Park Lodge.
John Morley, Esq., Nottingham.
Jonathan Burton, Esq., Carrington.
Samuel Cartledge, Esq., Mapperley.
William Page, Esq., Radford.
R. P. Hewitt, Esq., Nottingham.
Thos. Adams, Esq., Lenton Firs.
William Patterson, Esq., Bulcote.
Richard Biddle, Esq., Nottingham.
William Chapman, Esq., Nottingham.
John Gibson, Esq., Nottingham Park.
Robert Attenborough, Esq., Nottingham.

ENGINEER-IN-CHIEF.—Charles Vignoles, Esq., F.R.S., M.R.I.A.

ACTING ENGINEER.—Mr. George Thompson.

BANKERS.—London—Sir R. C. Glyn and Co.

Nottingham—Moore and Robinson's Nottinghamshire Banking Company.

SOLICITORS.—Messrs. W. and S. Parsons, Jun., Nottingham.

PROSPECTUS.

This important line of railway will commence near the Midland Counties station at Nottingham, whence, after crossing the navigable River Trent, the line will proceed through or near Bridgford, Holme, Ratcliffe, and the intermediate villages, Bingham, Bottesford, Whetton, Eilon, the rich and fertile Vale of Belvoir, to the town of Grantham, thence passing through or near Fellingham and Bourn, or one of them, to Spalding, Long Sutton, Sutton-bridge, and King's Lynn, and there joining the intended Lynn and East Dereham Railway, will form the most direct line of connection between the eastern counties, and the great and populous manufacturing districts of Lancashire, Yorkshire, and Staffordshire. By the proposed Grand Union Extension Line to Amber Gate, and other lines north of Nottingham; and by means of the line to Yarmouth will also form a communication between the eastern and western coasts of the kingdom.

The southern parts of Lincolnshire, and the north-eastern parts of Cambridgeshire, will be afforded a direct facility of intercourse with some of the best markets in England. The neighbourhood of Nottingham being the most eastern part of the great midland coal-field, this line will afford a supply of coals, as well as being the medium of transit of Derbyshire iron to the great manufacturing districts of Lancashire, Yorkshire, and Staffordshire. The Report of the Board of Trade on the subject of the proposed line says:—"The total cost attending the transmission of a quarter of coals from the interior of Lincolnshire, by sea, from the port of Boston to London, including freight, insurance, lighterage, commission, and other charges, is stated to amount to very near 8s. The charge by railway per quarter (allowing five quarters to the ton, at the charge of 14d. per ton per mile, at which the estimate of the Cambridge and Lincoln Railway is taken) would not exceed 2s., and the remaining charges are calculated not to exceed 2s. 6d., thus showing a benefit to the coal growers and to the public of 5s. 6d. per quarter, occasioned by the saving of the sums now paid for insurance, delay, loss in weight, depreciation of quality, lighterage, &c."

"A still more important advantage to the farmer is afforded by the opportunity given by railway communications of availing himself promptly of the most favourable market. It frequently happens, that owing to the delay and difficulty of transmission, the farmer is compelled to sell his wheat at the nearest provincial market at a price considerably below the average rate, and to lose the advantage of a temporary rise."

"Transfer of land to equalise prices and to prevent excessive fluctuations, cannot but be considered a benefit both to the producer and the consumer. We are satisfied that much may be done in this way by an economical and well arranged system of railway communication."

The same remarks apply to the whole of the great manufacturing districts of Lancashire, Yorkshire, and Staffordshire.

The great quantity of land, amounting to 100,000 acres, about to be redeemed from the sea by a company, with Sir John Romme as engineer for the promoters, and Mr. Rendell as the contractor, will ultimately prove of great advantage to this undertaking. And it is conceived that the Grand Union Railway must meet with the cordial co-operation of the midland railways, as an immense traffic will be brought along these lines en route to Birmingham, the Potteries, and the whole of the manufacturing districts of Staffordshire. The traffic upon the intended Nottingham and Mansfield, Sheffield and Newark, Manchester, Sheffield, and Midland Junction, and the Sheffield and Manchester lines must also derive a great increase of traffic from this line of railway.

Power is intended to be reserved in the Act to allow 4 per cent. interest upon deposits and calls, until completion of the line.

Applications for shares may be made to Messrs. Capes and Stuart, solicitors, Grier's Inn, London; or Messrs. W. and S. Parsons, Jun., solicitors, Nottingham, where the forms of application may be obtained; or from Mr. Charles Spencer, Mr. Pearson Peet, Mr. Samuel Collinson, sharebrokers, Nottingham; or Mr. Charles Cancellor, stock and sharebroker, 1, Cushion-court, Broad-street, London; or Mr. R. S. Wilkinson, 8, St. Mildred's-court, London; or Mr. William Haynes, sharebroker, Manchester; Messrs. Edward King and Co., Leeds; Messrs. Potter and Smith, Leeds; Messrs. Collinson and Flint, Hull; Messrs. Parsons and Townley, Liverpool; Messrs. Warburton and Co., Newcastle; Messrs. J. J. Senior, Sheffield; or Mr. Andrew Moffatt, 21, George-street, Edinburgh.

No further applications for shares can be received after Saturday, the 24th of May inst., except from landowners and parties locally interested along the line; and none from the latter after Saturday, the 31st of May instant.

The allotment will take place immediately afterwards.

GREAT EASTERN AND WESTERN RAILWAY,

FROM YARMOUTH TO SWANSEA.
Provisionally registered pursuant to 7 and 8 Victoria, cap. 110.

Capital £3,500,000, in 70,000 shares of £50 each.—Deposit £2 10s. per share.

PROVISIONAL COMMITTEE.

Henry Williams, Esq., Penpont, Lord Lieutenant of the County of Brecon.
Sir John E. de Beauvoir, Bart., Director of the Manchester and Birmingham Continuation and Welsh Junction Railway.
William Flunkett de Beauvoir, Bart., Fortman-square.
Henry George Ward, Esq., M.P. Director of the Eastern Counties Railway.
David Robert Ross, Esq., M.P. Belfast.
Richard Ashton, Esq., White Lion-court, Cornhill.
William G. Beare, Esq., Forchester-place, London, Director of the Worcester, Shrewsbury, and Crewe Union Railway.
Joseph Beaumont, Esq., The Tump, Abercromby, and Cwm Celyn Iron-Works.
John Hunt, Esq., Upper Bedford-place, Director of the London Docks.
Edm. M. Lamb, Esq., Upper Bedford-place, Director of the London Docks.
Thomas Brown, Esq., Ebbw Vale and Sirhowy Iron Company.
William Henry Buckland, Esq., Cadixton House, Vale of Neath.
James Clay, Esq., Brompton, Director of the Wolverhampton, Shrewsbury, and Birmingham Railway, and Whitehaven and Furness Railway.
Henry Cornfoot, Esq., Copthall-court, and Old Palace, Richmond.
Frederick Levick, Esq., for Messrs. Crutwell, Allies, and Co., Cwm Celyn and Blaenavon Iron-Works.

James Parker Dean, Esq., D.C.L., Forchester-terrace, Bayswater.

Thomas Dowling, Esq., Marlboro-place, St. John's Wood.

David Evans, Esq., banker, Merthyr Tydvil.

John Evans, Esq., banker, Brecon.

Thomas Farncomb, Esq., Alderman, Director of the Namur and Liege Railway.

William Findon, Esq., Hanover-terrace, Regent's-park.

Howland Fothergill, Esq., Aberdare Iron-Works, Glamorgan.

Algernon W. D. Greville, Esq., Cambridge-terrace, Hyde-park.

Richard Heavside, Esq., Brighton.

J. C. Hill, Esq., Pwllidw Colliery, Blaenavon.

Samuel Homfray, Esq., Tredegar Iron-Works, Monmouthshire.

Jonathan Hopkinson, Esq., Fenchurch-street, Director of the Great Northern of France Railway.

James James, Esq., Swansea.

Thomas Jones, Esq., Liverpool and Venall Iron-Works, and Blaenavon, Venall, and Forchough Collieries.

John Johnson, Esq., Great Winchester-street.

John Kallil, Esq., London Bridge-wharf, Director of the Worcester, Shrewsbury, and Crewe Union Railway.

Arthur Mann, Esq., Woburn-square, and Denver-hall, Norfolk.

John Mann, Esq., Tynar, near Abercromby, and Blaen Dir Coal-Works.

Henry Brooks Marriott, Esq., Vale of Neath, Blaenavon Iron Company.

William Morgan, Esq., Tay Des Park, Abercromby.

George Parbury, Esq., Russell-square, Director of the Manchester and Birmingham Continuation and Welsh Junction Railway.

Lancelot Powell, Esq., Clydach Iron-Works.

Joseph Rasher, Esq., Glyn-y-Rose, Vale of Neath.

John Smith, Esq., 3, Shorter's-court, and Peckham.

Edmund Stoddart, Esq., Old Broad-street.

William Steele, Esq., Abercromby, Blaenavon Iron Company.

S. H. Steele, Esq., Abercromby.

Joseph Thompson, Esq., Director of the London and Brighton Railway.

George S. Trower, Esq., St. Mary-at-Hill, and St. James's-place, St. James's.

Joseph Underwood, Esq., Eastcheap, and Blackheath-park.

Thomas Wayne, Esq., Gadlys Iron Company, and Aberdare Coal Company.

Robert Bawson, Esq., Surrey-place, London.

B. I. Spedding, Esq., Mines Royal Copper Company, London and Neath.

Andrew Caldecott, Esq., Russell-square.

Thomas Henry Black, Esq., Limehouse.

(With power to add to their number.)

ENGINEER-IN-CHIEF.—William Gravatt, Esq., F.R.S.

ACTING ENGINEER.—Sandiforth F. Griffin, Esq., C.E.; Charles Brunell, Esq., C.E.

SOLICITORS.—Messrs. Elmslie and Preston, 47, Moorgate-street, London.

LOCAL AGENTS.

Swansea—Charles Basil Mansfield, Esq.

Aberdare—George Leeds, Esq.

Merthyr Tydvil—Messrs. Perkins and James.

Brecon—Messrs. Maybery, Williams, and Cobb.

Abercromby—Messrs. Morgan and Batt.

Worcester—Henry Foley, Esq.

Birmingham—Messrs. Lee, Pinson, and Best.

BANKERS.

London—The London and Westminster Bank, Lothbury.

The Commercial Bank of London, Lothbury and Henrietta-street.

Swansea—The Glamorgan Banking Company.

Merthyr Tydvil and Brecon—Messrs. Wilkins and Co.

SECRETARY (pro tem.)—Robert de Neuville Lucas, Esq.

On reference to the map of England, it will be found that the existing railways lying to the north of the Thames, with the exception of the Great Western and Maryport and Sunderland railways, run more or less in a northern and southern direction.

The object of the present railway is, by taking Birmingham as the manufacturing capital, as well as the centre of England, to make a direct communication between it and Swansea on the west, and Yarmouth on the east; thereby connecting the Irish Sea and the Channel with the German Ocean.

The counties through which it will pass are those of Rutland, Leicestershire, Warwick, Worcester, Hereford, Monmouth, and Glamorgan, embracing from its contiguity, and by taking advantage of the lines already formed, the counties of Norfolk, Cambridge, Huntingdon, Northampton, Nottingham, Derby, Stafford, Gloucester, Brecon, and Carmarthen. The country embraced within its sphere of action is, in every respect, the richest for mining, agricultural, and manufacturing produce; and contains a population amounting to 3,000,000.

This line, commencing actually at Oakham, though by the above means virtually at Yarmouth, will embrace directly or indirectly the towns of Norwich, Thetford, Brandon, Ely, Downham, Lynn, Wisbeach, Peterborough, Stamford, Oakham, Leicester, Nuneaton, Birmingham, Stourbridge, Kidderminster, Stourport, Worcester, Hereford, Abercromby, Merthyr Tydvil, Neath, and Swansea.

The Counties of Glamorgan and Monmouth abound in iron as well as coal: as do those of Brecon, Worcester, Stafford, and Salop. The quantity of iron produced annually in England and Wales is estimated at 1,500,000 tons; of this one-third is raised in the immediate vicinity of Merthyr Tydvil, whilst another third is the produce of the English counties above named. The whole of this quantity, with the copper, &c., from Swansea and its neighbourhood, will depend for transit to Birmingham and the manufacturing districts upon this railway.

The coal-fields of Monmouthshire and South Wales are inexhaustible, extending over more than 1,200 square miles. The coals are equal to the best Wallasey, and are, for steam, of a superior quality to every part of the world, even to Cardiff and China. The Welsh culm, or stone coal, is also in great demand for manufacturing purposes.

Stone for building may be abundantly supplied along the whole line.

The line and limestone found in several portions of the line will find a ready transit, not only for building, but manufacturing and agricultural purposes.

The Droitwich salt must depend chiefly upon this railway for its conveyance. The annual consumption of salt for domestic purposes exceeds 1,000,000 tons. A great portion of this quantity is made at Droitwich.

The various articles required for the manufacture of glass of all kinds will be conveyed by this railway to Stourbridge, Birmingham, and other parts of Warwickshire, as well as to Staffordshire.

Pottery and Porcelain will prove articles of considerable traffic on this railway. The annual sales from the English Potteries amount to 2,250,000*l.* Worcestershire in reality possesses greater facilities for this manufacture than the counties of Stafford and Derby, for though the latter are rich in the abundance of coal (which by means of this railway will find a ready and cheap transit to the eastern agricultural districts), they depend for their supply upon Dorsetshire and Devonshire, and for flint upon Kent; whereas, Worcestershire possesses a ready supply of all these materials. The annual manufacture of leather gloves at Worcester has been estimated at 500,000 dozen pairs, and valued at 380,000*l.*

The total annual value of metallic goods, made chiefly at Birmingham and Sheffield, by the last year (1854), was 17,000,000—320,000 persons there finding employment. Birmingham has since doubled its population, and Swansea, Merthyr, Stourbridge, Dudley, and numerous places in the counties of Worcester, Stafford, and Warwick, have vastly increased in size and importance.

The traffic in woollens and silks will be greatly increased by means of this railway: the Welsh fleannels will be carried to the Midland and Eastern counties, and will find a ready outlet from Yarmouth and Swansea. So also will the Worcestershire woollens and worsteds, &c., find ready sale in the Eastern counties and the principality of Wales.

At present 80,000 barrels of cyder, and 30,000 barrels of perry, are annually sold from the counties of Hereford, Worcester, and Gloucester: the orchard owners of these counties, by means of this railway, will have the opportunity of doubling their sales.

By means of this railway the great agricultural counties of Lincoln, Norfolk, and Suffolk, as well as those in the principality, will be enabled to supply corn, cattle, and provisions of all kinds to Birmingham and the adjacent densely populated manufacturing districts.

Sea and fresh-water fish will be supplied in daily abundance all along the line, from Swansea and Yarmouth.

The distance by this railway between Swansea and Worcester will be seventeen miles shorter than by any other proposed line, whilst it possesses the all-important advantage of passing directly through the heart of the iron and coal district; and there are, perhaps, few instances where greater advantages may be reasonably anticipated from the extension of a railway, through a country so rich in many considerable places and important mineral and agricultural districts, which have hitherto suffered from the comparative isolation of their position, within a few hours' journey of the great manufacturing districts of England.

A recent report of the Board of Trade states that railway accommodation will evidently, at no distant period, be required, to place Herefordshire, Worcestershire, South Wales, and the important districts lying to the west of the present lines of railway, in direct and unbroken communication, through Birmingham, with the manufacturing districts and the great railway system in the rest of the kingdom.

From the foregoing abundant sources of traffic, to say nothing of the profit derivable from a never-ceasing flow of passengers, an unusually large per centage upon their capital may be confidently anticipated by the shareholders of the company. Power will be asked in the bill to be presented to parliament, to allow interest at the rate of 4 per cent. per annum on all deposits and calls, from the time of payment until the opening of the line.

Preliminary surveys have been made, and sections have been taken, by which the practicability of the line has been fully established.

In conclusion, public attention having been drawn to the atmospheric principle, the committee think it proper to state, that they will be in a condition to take advantage of that principle, should it be eventually proved advantageous to their undertaking.

Applications for shares to be made to the provisional committee, at the office of Messrs. Elmslie and Preston, solicitors, 47, Moorgate-street, London; or Messrs. John Sewell and Son, sharebrokers, Tottenham-court-road; Mr. John Dunnett, sharebroker, Manchester; Mr. John O'Neil, sharebroker, Manchester; Messrs. W. Reynolds and Son, sharebrokers, Liverpool; Messrs. H. and C. Beardsaw, sharebrokers, Leeds; Messrs. Tate and Nash, sharebrokers, Bristol; Mr. James Pearson, sharebroker, Birmingham; Messrs. Samuel Hutchinson and Co., sharebrokers, Bradford; Mr. Robert Allan, sharebroker, Edinburgh; Mr. William Gordon, sharebroker, Aberdeen; Mr. Andrew Brand, sharebroker, Glasgow; and Messrs. Bruce and Symes, sharebrokers, Dublin; of whom prospectuses may be had.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The FIFTEENTH MEETING of the British Association for the Advancement of Science will commence in CAMBRIDGE on Thursday morning, the 19th of June, 1845. JOHN TAYLOR, F.R.S., General Treasurer.

NOTTINGHAM, EREWASH VALLEY, AMBER GATE, AND MANCHESTER RAILWAY.—The directors give Notice to the applicants for shares in this railway, that they are preparing for the allotment, but, in consequence of the number of applications being so large, the letters cannot be issued for some days. It is requested that NO FURTHER APPLICATIONS will be sent, as none can now be received. By order of the Board, JOHN GOUGH, Secretary.

BELGIAN GENERAL RAILWAY COMPANY. Capital £3,000,000 sterling, in 150,000 shares, of £20 each. Deposit £2 per share. PROSPECTUSES will be daily ISSUED, in the mean while applications for shares may be made to the provisional committee, at the office of their solicitor, George Ogle, Esq., 4, Great Winchester-street, London.

PATENT GALVANISED IRON COMPANY.—NOTICE—The Attorney-General has given his fiat, and a *scire facias* has been issued to REPEAL this COMPANY'S GALVANISING PATENT (Sorel's process), which was tried in February last, before Chief-Justice Tindal, in the cause of Patteson v. Holland, and found by the jury to be invalid.—May 9, 1845.

THE PROJECTED RAILWAYS.—ANALYSIS of the PATENT METALLIC SAND, OR ENGLISH POZZOLANO, used in the foundations of the New Houses of Parliament, the great tunnels on the Birmingham Railway, seawall on the Great Western Railway, in Devonshire, and other important works, referred to more particularly in the prospectus:—

Silica 49 Magnesia 2
Oxide of iron 32 Zinc 3
Alumina 6 Arsenic and carbonate of copper 2
Lime 6
Used as an external Stucco, the Metallic Sand Cement is cheaper than Roman Cement—unaffected by frost or wet—in appearance resembles the best Portland stone—requires neither colour nor paint—and is entirely free from vegetative cracks and blisters, to which Roman Cement is liable.
Price in Swansea, free on board 6d. per bushel;
Or supplied in London at 1s. per bushel.
Further particulars, on application to Mr. C. K. Dyer, 4, New Broad-street, London: or at the Metallic Sand Wharf, opposite Pratt-street, King's-road, Camden New Town.

ATHERSTONE, ASHBY-DE-LA-ZOUCH, AND BURTON-ON-TRENT RAILWAY. Capital £250,000, in 12,500 shares, of £20 each.—Deposit £1 2s. per share. Provisionally Registered under 7 and 8 Vic. cap. 110.

The main object of this undertaking is to bring the valuable coal-fields of Moria and Ashby Woods into direct and immediate communication with the southern and western markets, by means of the Trent Valley, Midlands, and Churnet Valley Railways. It is also intended to give to the important town of Burton-upon-Trent, and the populous country to the north and west, convenient access to this district. Another principal feature of the line is to supply railway communications to the celebrated mineral baths at Moria and Ashby-de-la-Zouch, and to the inhabitants of the latter town and neighbourhood. It will also afford an outlet to the extensive trade and fabrics of the Leicestershire Potteries. By means of a short and easy branch to the Leicester and Swannington Railway, that coal-field will be brought into connection with the Trent Valley and Churnet Valley Railways, and the southern and western markets. Another local advantage will be the supply of lime to the rich agricultural district affected by this line from the collieries of Ticknall, Clondish, and Breddon. With these various sources of traffic, the absence of competing lines and unusual facilities in the character of the country for the formation of the railway, no considerable work being required, and the gradients peculiarly favourable for the working of the line, there is a certain prospect of a more than ample return for the capital.

A plan and prospectus will be issued in the course of a few days, and, in the meantime, application for shares may be made to S. S. Baxter, Esq., solicitor, Atherstone.

HARVEY AND WEST'S PATENT VALVES, APPLICABLE TO PUMPS OF EVERY DESCRIPTION.

The superiority of these valves, as economical in respect both of trouble and expense, has been proved by the experience of their GENERAL USE for more than SEVEN YEARS.

The patentees refer to nearly all the water-works' engineers in the kingdom, by whom satisfactory testimonials have been freely given.

The principle adopted is that of "OBTAINING THE GREATEST WATER PASSAGE BY THE LEAST POSSIBLE PRESSURE AREA," thereby avoiding the great concussion occasioned by the closing of ordinary valves, and the loss caused by letting in air under them.

Until the invention of these valves (first used at the East London Water-Works), the most economical mode of raising water—viz., by the plunger-pump, and the principle of expansive steam, as practised in Cornwall, was impracticable for water-works purposes.

Sketch A shows the manner in which the valves have been applied to air-pumps of steam-engines. Sketch B, the manner of their application to pumps for lifting water.

The Valves are shown open in both Sketches.

Address Messrs. HARVEY and WEST, HAYLE FOUNDRY, CORNWALL. PRINCIPAL MANUFACTURERS. Messrs. HARVEY and CO., HAYLE FOUNDRY, CORNWALL.

WORK PERFORMED BY CORNISH ENGINES.

The number of pumping-engines reported for the month of April is 35—the quantity of coals consumed being 2768 tons, lifting, in the aggregate, 28,000,000 tons of water 10 fathoms high—the average duty of the whole is, therefore, 57,000,000 lbs. lifted 1 foot high by the consumption of a bushel of coal.

Mines.	Engines.	Length of stroke in feet.	Load in pounds.	Load per sq. inch on piston.	Strokes per min.	Consumption of coal in bushels.	Millions of foot of water by consumption of 1 bushel of coal.	Average quantity of water per min.
Godolphin ...	Sims's 80-inch	10-0	70,343	11-2	5-0	1691	70-8	1025-0
Ditto ...	Robert's 80-in.	10-0	75,477	12-0	8-9	3308	68-2	
Great Work ...	Leech's 60-in.	9-0	46,335	14-3	8-4	1992	59-5	200-4
Wheal Vor ...	Robert's 80-in.	10-0	115,036	18-3	6-7	3916	67-9	403-0
E. W. Croft ...	Trevenson's 80	10-33	83,698	12-9	3-1	1418	57-1	175-4
Carn Brea ...	Sims's 50-in.	9-0	37,768	15-0	5-3	808	73-2	256-4
United Mines ...	Taylor's 80-in.	11-0	91,058	16-6	5-5	2339	89-5	
Ditto ...	Eldon's 80-in.	9-0	15,631	16-0	8-4	534	67-9	
Ditto ...	Loam's 85-inch	10-0	85,341	11-9	7-3	3210	64-5	1479-0
Ditto ...	Hocking's 85-in.	10-0	120,075	18-1	6-3	4372	61-8	
United Hills ...	Williams's 80	10-0	67,016	10-7	6-7	2808	62-3	465-7
Fowey Consols ...	Anstons's 80-in.	10-33	69,000	12-35	6-2	2654	77-6	469-0
Par Consols ...	50-inch	9-0	46,322	20-3	5-0	1476	63-9	259-0

MEETINGS OF PUBLIC COMPANIES DURING THE WEEK.

MONDAY.—Chester and Holyhead Railway, at One—Duffryn Llynvi and Porth Cawl Railway, at One—Grand Union Canal, at Eleven.
TUESDAY.—North Wales Mineral Railway, at Two—Austrian and Sardinian Railway, at One—Great North of England Railway, at half-past Twelve—Grand Junction Canal Company, at Twelve.
WEDNESDAY.—Great Western Railway, at One—Regent's Canal Co., at One—Thames and Medway Canal Company, at One.
THURSDAY.—London and Brighton Railway, at One—Surrey Iron Railway, at Two—North Union Railway, at One—Waterloo-bridge Company, at One—Hammersmith-bridge Company, at One—Reversionary Interest Society, at Twelve.
FRIDAY.—London and South-Western Railway, at One.
SATURDAY.—Brighton and Chichester Railway, at One.

PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY.—It appears from the report of the proceedings of this company, held yesterday (for which we have not room this week), that their affairs are in a flourishing condition, and that the directors have, in consequence, recommended a net dividend of 3½ per cent. to be declared on the paid-up capital; the income tax, which has hitherto been deducted from the dividend, to be now paid out of the surplus profits of the concern. The line to China is to be opened on the 1st of August next, the company's vessel leaving Southampton on the 20th of June. To enable the directors to perform the extended engagements which they have made, they have put in progress of construction two ships of 1800 tons, and 450-horse power each; two of 800 tons, and 300-horse power each; two ships of 1200 tons, and 450-horse power each; one of 700 tons, and 260-horse power. The directors seem to think that through the intervention of Her Majesty's Government, the transit of travellers through Egypt will be greatly expedited.

NOTICES TO CORRESPONDENTS.

A. B.—The black oxide of manganese will give out, when inclosed in an iron retort, and exposed to a sufficient heat in a furnace, about one-seventh part of its oxygen; and, consequently, is generally used in the production of this gas for experimental purposes. Notwithstanding our Double Sheet, we are compelled to postpone several letters and articles to which we wished to have given insertion, also reports of the meetings of the National Bank of Ireland, the Brighton, Hastings, and Lewes, and other railways.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, MAY 31, 1845.

* With the Mining Journal of this day is given a Stamped Extra Sheet, which should be forwarded at the same time, and with each copy of the usual paper.

The letter of a correspondent, signed "One Interested in Copper Smelting," inserted in last week's Journal, too evidently shows the interest he feels, without any other evidence being rendered necessary, than the manner in which the subject is treated—while, had the subscription to the letter been "An Old Miner," it would require but little discernment to unmask the writer. The letter in itself is so pretty an instance of the way in which those "interested in copper smelting" would attempt to justify the course they are pursuing, making fortunes at the cost of the home miner, that we must needs devote some space to the matter, although we admit the puerility of the writer hardly warrants our occupying space in refuting his statements.

However we may encroach on our columns, we will take the letter "piecemeal," and trust that should he deign to reply or notice our remarks, he will get aid from "high quarters," and not render himself so ridiculous as the present communication, as well as the former, is calculated to make him. If that he be the puppet of the show, we can afford to smile—if not, to indulge in a hearty laugh; but if that farce be put forward as tragedy, we must, of course, criticise the play, and most assuredly had it been submitted to us for correction and amendment, we should, in the first case, have used the pruning-knife "pretty considerably"—while the latter would have imposed on us the necessity of re-writing the letter, and altering the sense; at the same time, that it would have been our endeavour to have vested it with something in the shape of fact or argument. Divested, as it is, of both, we have only to repeat that it should have been passed by unnoticed, yet as we like the subject matter being well canvassed, we gladly afforded space for the letter, so that we might gratify ourselves by saying a few words in reply. Now, to the letter. Our correspondent says, "the rich ores require the poor ores as fluxes"—meaning, by that, if the smelter had not the rich foreign ores, he probably would not think it profitable to purchase the low priced Cornish and Irish ores. From this remark we might assume, and very fairly, that our correspondent is in a blissful state of ignorance as to the position of the copper trade for the past century, and the produce of our home mines, for he would endeavour to lead us to believe that the poor Cornish and Irish ores could not be worked without the aid of the rich foreign ores, which were unknown in this country some fifteen years since, admitting, at the same time, that our low produce ores are necessary for smelting the richer sulphurets, carbonates, or oxides produced in Chili and Cuba. We think it only necessary to refer our correspondent, and others equally wanting in information as himself, to our columns, as to the produce of our home mines, and the standard antecedent to the import of foreign ores, and he will then, perhaps, discover that the smelters did contrive to reduce the poor ores of Cornwall and Ireland into metallic copper, and that they also managed to render it profitable to themselves, while they could well afford to give a far higher price to the miner than that now to be obtained.

Our correspondent proceeds to say that he "never contemplated exporting English ores with a view to smelting, but that a great quantity of the foreign ores of a low per centage, which, owing to the expensive freight and oppressive duty at present, are lying idle at the mouths of the mines, would be shipped whenever foreign smelting establishments were formed." This is all very pretty, if that it would bear investigation, and although we are ready to admit our correspondent never "contemplated exporting English ores," for that he denies, we should not feel surprised if, next week, he tells us that he never "contemplated" the importation of low produce ores from Chili or Cuba, which would not pay freight or cost of transit, while we hesitate not to tell him in distinct terms, that the poor ores to which he refers cannot be shipped and delivered at any foreign port, even without duty being imposed, which will leave 1s. per ton to the adventurers. This, indeed, is too notorious to require further remark. Just one word more as to foreign smelting establishments. There is an old saying, and it is sage advice, of, we believe, a certain Mrs. GLASS, who, in giving a recipe for cooking a hare, says, "first catch it." Now, if we mistake not, our correspondent will find it somewhat difficult to "catch" parties employing their capital in erecting "foreign smelting establishments"—however, he writes cautions, for he says these ores of low produce will only be shipped, whenever these said "foreign smelting establishments" are formed. But let us proceed. He next cites the letter of a correspondent, "An American and a Free Trader," who states there is an "amplitude" of coal in America, but he also admits that he is not aware "where this coal-field lies," but, says he, with a degree of naivete and force, "should it not be far from the sea, the Americans might soon become formidable rivals to the English smelters." It is unfortunate for our correspondent that there should be the necessity of using the word *should*, as if the case were as he contemplates, there can be no doubt but that America would do her best; and that the foreign miner, like Pennsylvania, would repudiate the old country. On this point, however, it is quite clear that neither "An American and a Free Trader," nor "One Interested in Copper Smelting," possess much information on this point, or they would, doubtless, render it, anxious, as they are, to see smelting carried on abroad. We are, however, digressing somewhat, and must again refer to the letter under notice, from which we learn, or rather it is assumed, that we "cannot but be aware that a great many of the poor Cornish mines at present number among their principal adventurers gentlemen connected with the smelting establishments at Swansea, who are interested in throwing round the poor mines a protection sufficient to keep them afloat, sacrificing a little of their smelting capital to give increased value to their mining stock." This must be our last quotation from the letter under notice, and as its absurdity carries with it its own comment, we thus take leave of our correspondent, who, we feel assured, will not receive the laudations of the Messrs. WILLIAMS, VIVIAN, GREENFELL, SIMS, and others of the band of smelters. "Save us from our friends," may well be said in the present case, and until "One Interested in Copper Smelting" better understands his subject, or deals with it more fairly, we recommend him to indulge his *cacothesis scribendi* in writing for *Punch*, for his letter lacks much of "count-house" material, and which, we apprehend, is put forward rather as a feeler, than with any expectation that the object can be advanced or achieved by communications of so puerile a character as that under notice.

We direct the attention of the scientific inquirer to Mr. Emslie's paper on the methods of determining the velocity of the piston of a steam-engine, at any portion of the stroke, with a description of his own invention for this object, inserted in another column of this day's Journal. No doubt can be entertained, but that the engineer in this branch of mechanical philosophy, will be, by the use of Mr. Emslie's plan, greatly facilitated in his operations.

HARVEY AND WEST'S PATENT VALVES.—It is now some five or six years since we first directed attention to the improvements effected by Messrs. Harvey and West in raising water by means of their patent valves, now very generally applied to pump-work, and the merits of which require only to be better known to insure their general adoption. The principal merits of the invention are, that the valves close so gently that little or no concussion takes place in the pitwork, while, at the same time, they are so perfect in construction, that no water is lost or air admitted. In ordinary valves, the shake in the column of pumps, by the blow in closing the valves, is such, that the whole fixture frequently becomes unsteady, and the wear and tear of buckets, rods, &c., is necessarily very great; even the buildings containing the engines are occasionally shaken to a considerable extent by this movement, and the engines, besides having to contend with the greater friction created by the tremble in the pump-work, thereby requiring more coals and a greater expense to raise the water, is often damaged and worn to a much greater extent than it would be if worked by valves closing easily, and subjecting the pitwork, engine, &c., to no unnecessary unsteadiness. It is due to the public, as well as to Messrs. Harvey and West, that the merits of their improvement should be known, and we are also glad to learn, from information we have derived from Mr. Wicksteed, the engineer to a majority of the metropolitan water-works, and who has introduced upwards of fifty of these valves into pumps, varying in size from nine to forty-two inches diameter, that he considers them the most perfect valve for pump-work yet invented, or that has fallen under his notice. This opinion, from a gentleman whose practical experience in this department is not only extensive, but to which much value must be attached, is at once the strongest evidence which can be afforded of the importance of the patent.

We are happy to find, that our article relating to the attack on Pilsbrow's Atmospheric Railway and Canal Propulsion Company, has been well received; and that, instead of any injury being inflicted on its interests by the attack, to which we refer, it has elicited investigation, and more effectually established the confidence of the public in the originality of the invention, and its practical utility. The peculiar merits of the principle, patented by this company, are becoming more extensively known, and, wherever known, admired and patronised. Circumstances, of late, have been favourable to give it notoriety, and to place in its own distinct character before the public, as entirely unlike any other system of atmospheric propulsion, and free from many of the difficulties and objections, both in construction and working, to which other systems are liable.

We deem it necessary to give publicity to the above statements, because we have met with many persons, during the last week, who have confounded the Pilsbrow atmospheric system with others, which have been before the public. A report has been current, that this company had entered into engagements with the Northumberland Company, whose project was rejected by the Board of Trade. This report is without any foundation. It is true, that the proposed line was to have been worked on the atmospheric principle; but not according to the invention which this company is designed to promote. The prospects of success opening to this company, both at home and abroad, are of the most encouraging character.

The application of atmospheric power, as a mode of propulsion on canals, is one department in which, it is expected, the operations of this company will be very extensive.

PATENT FUEL.—The manufacture of this article has attracted much attention, and several patents have been obtained for various plans with the view of superseding coal. We have received communications on the subject, one of which more particularly refers to Mr. Wylam's patent, whereby we are given to understand that the works for the manufacture of that gentleman's patent fuel have been in operation the past eighteen months, and at which upwards of 600 tons are manufactured weekly. The subject we consider one of importance, and shall endeavour, in the course of the ensuing week, to acquire more detailed information.

The increase and speculation in railways is a question of considerable importance to the future welfare of the country. It is frequently asked what will be the end of all this? It is clear that the whole order of things is soon to be completely revolutionised, and the sooner we are prepared for the great change the better. We are now in a state of transition, and it is somewhat singular that, while we are in this position, we are not suffering more inconvenience than we now experience. All those not directly engaged in land or agricultural pursuits, must, of necessity, remove to the great termini of the empire; and, however much this may militate against our good old notions of English society, stern necessity commands it, and the village must be reduced to the lawyer, the doctor, the carpenter, and the smith. It is true that this may make very little difference to the real state of the country or the people, for we are migratory in our habits, and those most tied to home become indifferent to it if they can do better elsewhere, and that place becomes home which treats us best, and best provides us with the comforts and luxuries of existence. It is also more natural that the land should only be provided with a sufficient number of inhabitants for its necessities, and the superabundant population are better employed in hordes, either for the sake of commerce or of manufacture. The hording together of one class of people also calls together other classes, which are dependant upon the business of those more numerous; and after the colossal schemes of railways, now proposed, are completed, there can be little doubt but that it will be attended with a greater portion of general prosperity; the land will not be encumbered with a useless population, and the towns will be so altered and re-constructed as to provide for them; and every kind of manufacture will be increased, and commerce extended; while, from the improved facilities of transport of the raw material of the British Empire, it is to be expected that our manufactures will flourish, so as to exceed those of every other nation; that we shall grow into a healthy mart, and bid competition defiance; and that our fields will become more valuable, for it must be observed that an equivoque must take place in the value of vegetation produced in the immediate vicinity of the metropolis and the larger towns, and that of the western margin of Ireland. With respect to the safety and means of carrying these undertakings into effect, it is clear that the security is much better than that which has been usually the outlet of hoarded bullion, for it is the next thing to the green acres themselves, and if at first the per centage be small, it is only reasonable to suppose it will gradually increase, and that at last all lines selected with any degree of engineering skill and proper data must pay. We may here observe, *en passant*, that the engineers of the present day on most of the railways neither consult the interest of the companies they represent or the health of their passengers. It is a disgrace to England that the poorer classes are obliged to travel against cold boards, cooled outside to the temperature of an atmosphere rendered more frigid by the speed, and communicating rheumatism, and, perhaps, death, to the unfortunate being who has not money to pay for accommodation. If the inside of these carriages were lined with the commonest flannel, it would be a mere act of humanity; but when we look at the manner the London vehicles are fitted for rich and poor, and the great, the immense, profits wrung from the sorrowing humbler classes, is it too much to ask these hard-hearted directors—who can only be assimilated to their own engines in feeling—whether they can look upon the sufferings of their poor fellow-creatures for the saving of a few shillings to each carriage, and, after all, it is doubtful whether the increased traffic, consequent upon such an alteration, would not more than pay the outlay; or whether the pleasure of doing a good action would not be more than the equivalent of loss in £. s. d.?

EASTERN COUNTIES RAILWAY COMPANY.—A special meeting of proprietors was held at the station, in Shoreditch, on Tuesday last, the 27th inst. (HENRY BOSANQUET, Esq., in the chair), for the purpose of approving the several bills before the House of Commons for a branch line from Hertford to Biggleswade, capital 450,000*l.*; one from Cambridge to Huntingdon, capital 150,000*l.*; and a bill for a deviation between Whittlesea and Ely on the Peterborough line.—The bills were severally approved, and a vote of thanks passed to the chairman.

Original Correspondence.

THE VICTORIA IRON-WORKS AND THE MONMOUTHSHIRE AND GLAMORGANSHIRE BANKING COMPANY.

SIR,—I am a shareholder to some extent, for my means, in the above banking company, and took shares when the company was first formed. It is now some years since, and the shareholders paid Messrs. Philip Jones and R. I. Blewitt something like 50,000*l.* for their private banking business, then carried on at Newport, Monmouthshire, Abergavenny, Pontypool, and Chepstow (in the same county), and subsequently purchased Messrs. Towgood's Cardiff Bank, for, I think and believe, 7000*l.*—one of that firm becoming a member of the board of management of the joint-stock company. Branch establishments were then opened, in addition to those already named, at Usk and Tredegar Iron-Works in Monmouthshire, and at Cardiff, Bridgend, and Swansea, in Glamorganshire. The business has been carried on up to this time, making half-yearly dividends of upwards of 6 per cent. per annum; so far, Mr. Editor, you would be inclined to say—I think you have embarked in a very profitable and good concern, and therefore do you grumble? but, alas! our shares of 15*l.* each have been selling heavily at 6*l.* 10*s.*, and our Cardiff and Bridgend branches closed; but Mr. Towgood, after pocketing our 7000*l.*, and leaving us, has again opened his bank on his own account, as formerly, and, our remnant in Glamorganshire—namely, Swansea—I understand, is getting ready to put its shutters up; that the business of our banks has been most carelessly and recklessly managed, is a matter of notoriety along the whole line of our respective establishments, at each of which accommodation, almost unprecedented, has been afforded to men of no property, and as little character, with the natural consequences. Our chairman from the commencement has dabbled heavily in iron and mining concerns, with the usual success attendant upon such speculations, "dropping heavily," to use a speaking phrase, in the British Iron, Blaenavon, and Cwm Celyn concerns, as well as engaged in other mining projects, the time for realising upon which is yet far distant; although a man of great and extensive acquisitions, keen perceptions, and good business habits, qualifications carried out by a master-mind rarely met with, yet these circumstances have, I feel sure, conducted very considerably to the depreciation of our property. Among the numerous iron concerns who unfortunately banked with us was the Victoria Iron-Works; at the winding up of that concern, there was a balance due to the bank of about 14,000*l.*, towards which 5000*l.* was subscribed by the few individuals not entirely cleared out previously, reducing our absolute loss to 9000*l.*, without interest for five years. Our committee of management took to the works, as a last resource; "hoping almost against hope," to yet redeem their losses, they entered upon the same, and commenced working, without, as it has since transpired, securing a lease of the same. I will here digress for a moment, to say, that I have read all that has appeared in your pages, with reference thereto, and however true, in fact, the exposures there made were (and they are still uncontradicted), yet I cannot but condemn the feelings by which the writers were prompted to act, more particularly your correspondent, "Candidus," who has the hardihood and malignity to attempt to throw ridicule upon a whole church, in consequence of the base conduct of one, professing to be a member of that church; thanks be to God! the purity of that church is beyond the power of "Candidus" to assail. From the day on which operations were first commenced at Victoria, I felt sure that our property would again depreciate, and our shares get still lower. And great—very great—was my disappointment, as well as that of others, on finding the golden dream held out to us at the last half-yearly meeting by Mr. Fraser (in words sufficiently significant), to be mere phantoms of the mind, and the fortunate speculations, announced in your columns, of the work realising 125,000*l.*, "ending in smoke." We are now involved in that fearful place the Court of Chancery. I have applied to my solicitor, to know what I am to do under these circumstances; he tells me that my course is plain enough and easy enough—"File a bill." Oh dear! Mr. Editor, and into Chancery I go too; I cannot sell my shares, for I have been told by two or three parties, to whom I have offered them, that they are not disposed to speculate in a Chancery suit. I am assured that Sir B. Hall has offered the bank 25,000*l.*, which is about 10,000*l.* more than the concern stands them in, if they will give up possession to him—which offer they refuse. Now, Mr. Editor, I think that our directors are not justified in holding these works one day longer than they can realise the money out of pocket—there is not a man in our directory having any pretensions to the conducting of an iron-work successfully, save Mr. Philip Jones, our chairman, and he is now taking that ease, which a life of industry, rewarded by affluence, is so justly his due. Our first speculation, that of 500 tons of old iron, purchased at 5*l.* 10*s.*, including delivery to the works, has proved a loss of 1000*l.*, and the make of our furnaces not exceeding one-half the make of those at the adjoining works, together with an inferior quality—our inability to raise coals and ironstone for the furnaces to say nothing of the mill and forge, all combine to depreciate and damage the property of a number of industrious individuals, for upon looking over our share list, the major part of the proprietors are of the middle classes in life, such as myself. I am not inclined for a Chancery suit. I have neither money or inclination for law, and I look to the pages of the *Mining Journal* for redress, by the publication of my grievances; the power of the press has a powerful and a just influence upon public men and public measures, and your columns especially upon public companies. I have endeavoured to set forth my case with clearness and with truth, avoiding, as far as possible, anything approaching to harshness or unkindness towards any one, and as it is my first attempt at writing in a newspaper, I hope it will find a place in your next Journal. For your private information, I give you my address.

Monmouth, May 27.

FAIR PLAY.

WEST WHEEL JEWEL MINING ASSOCIATION AND MR. CARDOZA.

SIR,—Having been from home for the last ten days, it was by mere chance to-day that I saw your remarks. I have tried every means to bring the matter to an arbitration, for more than two years past, which fact was declared by me in your paper, as far back as then, and even now, I am quite ready to entertain any proposition you may suggest, that may lead to the "settling matters straight"; and although you have presumed to publish your one-sided judgment on the case, if the gentleman you bestowed such encomiums on, in the preceding Number of your Journal, will constitute you their champion, I will appoint one equally as competent to judge on my behalf. We shall then see what the "tattle" is, for or against.

Hayle, May 28.

S. CARDOZA.

REVERSIONARY INTEREST SOCIETY.

SIR,—As a shareholder of the society, to which the inclosed report refers, and of some of whose proceedings you have occasionally given us a report, I request your attention. I have marked the passages on which I found any complaint—from these passages you will see that, on considering the clauses of a bill before the House, only thirty-four shareholders have been present, and yet I know that the number of our body is above 320; the bill in question contemplates a great extension of our capital, and a "pretty considerable" alteration of our economy; but, being a country gentleman, I have never, to this hour, seen a copy of it, and, probably, should not understand it if I did; if all, or the majority of my co-proprietors are in the same ignorance (and I have had no circular, informing me of this bill, as I had last year, and hence I infer that others are equally uninformed), is it proper that twenty-seven shareholders should have everything their own way? I am sorry to say, that there seems to be a great deal of the hole-and-corner principle in all the affairs of this snug company, and what you have lately told us of some of their goings on, is of rather a dirty character. I do not like it, for it looks bad. A friend of mine tells me, that even this printed and official report is not sound, and that much passed at the meeting which is garbled or suppressed. I applied at the office for a list of the shareholders, and could not get one. Please to keep an eye on what passes.—London, May 27.

A REVERSIONARY SHAREHOLDER.

[We perfectly agree with our correspondent, that an affair so important as the alteration of the very principles of the constitution of a company, ought not to be decided upon by a majority of a meeting of 34 proprietors, when the entire body consists of 320. We have perused the printed report of the "extraordinary general court of proprietors," held on the 16th, and continued by adjournment to the 19th inst., and are certainly of opinion that it is a document not at all calculated to enlighten a "country gentleman" on this misty subject, as, without a copy of the bill by its side, the whole is unintelligible—merely informing us, that clause 1, or 10 (as the case may be), was carried unanimously, or put to the vote, and carried by a majority of (generally) twenty-seven; which are the passages marked by our correspondent; while, in the absence of the bill, by which the nature of the clauses could be understood, the circulation of the report among the absent and distant shareholders is a mere farce. It, however, rests with the proprietors themselves; if they will not stir, the 286 must abide the decision of the 34.]

NEWCASTLE-ON-TYNE AND CARLISLE RAILWAY.

SIR,—In your Journal of the 17th instant there appears a letter, signed "One who will be Answered at the Next Public Meeting." The language of this letter would not entitle it to notice, but that it professes to state matters of fact, which, for the information of distant proprietors in the company, it may be well should be corrected. It asserts that the railway charge for coal is, for Carlisle consumption, 2*d.*, for exportation, 1*d.*, per ton per mile; and it states, that a portion of the directors, being coal-owners at the eastern end of the line, are such base and dishonest persons that they prostitute their position and influence as directors to the unworthy purpose of upholding high rates on the coal at the western end of the line, so as "to prevent the Blenkinsopp and other companies from competing at Newcastle" with the coalowners there. The facts are as follow:—The railway charge for dues and haulage, exclusive of waggon-rent and pontage for the bridge over the Eden (as paid by the Earl of Carlisle's collieries and the Blenkinsopp Company), is, for round coal for land sale, under 1*d.*; for small coal for land sale, under 1*d.*; for round and small coal exported, under 0*d.*—per ton per mile. These rates are most moderate. They have been so, expressly to encourage the traffic in coal at the western end of the line. If the further reduction in these rates, proposed by the Blenkinsopp Company, had been acceded to, the Newcastle and Carlisle Railway Company would have carried these coals at a loss. To have agreed to do so, would indeed have been a breach of duty on the part of the directors. If the Blenkinsopp Company shall continue in a state of inactivity, other collieries on the line will doubtless increase their production to meet the demand. The interest of the railway cannot be permanently affected by the suspension of the Blenkinsopp Company. The assertion, that the railway company is losing 8000*l.* a year by the suspension of the Blenkinsopp Company is a gross exaggeration. That it is suffering thereby to some extent, is quite true; and yet, so elastic are the sources of the company's revenue, that, notwithstanding this drawback, it has increased thus far in the present year, as compared with the corresponding period of last year, by upwards of 11 per cent. If your correspondent has any further attack to make on the proceedings of the directors of the Newcastle and Carlisle Railway, perhaps he will follow my example, and put his name to what he writes. Fighting under a mask is very convenient, but not always very honest.

M. PLUMMER, Chairman of the Newcastle and Carlisle Railway.
Newcastle-on-Tyne, May 27.

CROYDON ATMOSPHERIC RAILWAY.

SIR,—I have just learnt that the directors of the Croydon Atmospheric Railway are threatened with an injunction by a Mr. Pinkus, who asserts that Clegg and Samuda's patent is an infringement of a prior patent of his own. If Mr. Pinkus has a prior patent, it appears strange that he should not have put it into operation, and that the Dublin and Dalkey line should have been suffered so long to remain unmolested by Mr. Pinkus's injunction, with which the directors were threatened at the opening of that line some years ago, in like manner as the Croydon Company are now threatened for using Clegg and Samuda's patent. I, therefore, beg to caution the shareholders, through the medium of your widely-circulated Journal, not to be alarmed at such an idle threat, as it is evident to me, from the circumstances above stated, that Mr. Pinkus has no pretensions to Clegg and Samuda's patent, otherwise he would have stopped their works on the Dublin and Dalkey line.

London, May 29.

VINCE.

RAILROADS IN SPAIN.

SIR,—I should not have trespassed again on your columns, but the last communication of your correspondent, "C. L. W.," demands some notice. I cannot pretend to answer it. If my communications have been foreign to the subject, his are much more so; and, in no instance, has he shown how a railroad from Aviles to Leon will produce a profit, nor given an estimate of the cost of the line, or how the engineering difficulties, especially in the puertos from Campo Manes to Paccareas, and from thence to La Pola in Castile, are to be surmounted. I do not wish to enter into a political discussion, but I must observe that the security of any commercial undertaking more or less depends on the stability of the Government. It is notorious that this Government is but a compound of a camarilla and a court-martial. The country was progressing under Espartero, and by this time probably would have been in a more settled state, if not overthrown by Narvaez and French intrigue. That the financial position of Spain is in a flourishing state, we have your correspondent's letter, with a long array of figures, to prove. How is it, then, Senor Orense, one of the most enlightened deputies of the Cortes, does not see this, but has publicly stated that the railroads becoming Government property in ninety-nine years is a secure pledge for the national debt? The proprietors of the Royal North of Spain Railway will have the satisfaction of knowing that, by the time their railway becomes profitable, the Spanish Government will take it to pay the national debt. For my own part, I, as well as many others, do not think the projected railway will be carried to Leon, much less to Madrid; and if they depend principally on the coal-field of the Asturian Mining Company, as your correspondent's letter also further states, it is not necessary it should be carried further than Mieres. All colonial produce can be carried much cheaper to Madrid, and the rich and populous parts of Spain by the Cadiz line. All the havens on the Calabrian coast are bar harbours, and large vessels do not dare to approach them; indeed, in many winds, they cannot make them. Your correspondent has given you an elaborate description of the Asturian coal and iron field (which I never questioned), principally extracted from a pamphlet, entitled, *Report on the Coal Mines and Iron Ores of the District of Tudela, in the Asturias, in Spain*, a copy of which I have directed to be forwarded to you. I stated in my first letter, that a large export trade might be driven in coals, and his views are the same as mine on that subject. The road from Mieres (where the Asturian Company's concessions lie) to Oviedo has been surveyed, and I have no doubt the Asturian Mining Company will be grateful to the Royal North of Spain Company, if they make the road no farther than from Mieres to Aviles; very slight engineering difficulties occur in this distance, and that portion of the projected road once made, they have an outlet, and a profitable one, for their produce. This may probably suit the views of those who are largely interested in both companies; but I question much whether the small shareholder of the Royal North of Spain, who has buoyed himself up with a great project, would be satisfied with knowing that, after his capital had been expended on making the line, the Asturian Company pay the working charges. The duty on English coals has been lately repealed, and can now be supplied cheaper than Asturian coals at Cadiz, or any of the southern ports of Spain. As I stated before, iron is manufactured in Seville and Malaga more than sufficient to supply all Spain and her colonies. If so, admitting the practicability of the line, what are they to carry from Aviles to Leon or Madrid, and the towns on the line? There is a great prejudice against coals for domestic purposes, and there are no manufactures. Engineers are now in the country. I shall be excessively gratified to find there is a practicability of crossing the puertos of Asturias, and maintaining that part of the line at a tolerable expense. To give you some idea of the height; in the winter, the snow falls sometimes so heavily that the post is detained for two or three days, and a number of men, sometimes a hundred, are employed to clear the road. I cannot but imagine the projectors of the line are aware of this, though, till very lately, I never heard that any one connected with the line had been in the province, with the exception of Colonel Partington. Your correspondent informs us that there are 2000 tons of cast-iron in the royal factory of Trubia; that is, possibly, as much, but it is the castings of the old furnaces, and some iron that was cast twenty years ago. The smelting furnaces have just been commenced, and will not be ready for work for twelve months; this I have from the bricklayer employed to build them. In this letter I have endeavoured to avoid all topics foreign to the question, and not bearing directly on the subject, and I trust that, in his next communication, "C. L. W." will favour those in the dark here by enlightening them on the proposed traffic, working expenses of the line, &c., not forgetting the engineering difficulties. I had hoped he would have given us these statistics before: when that takes place I shall be happy to answer him; until that period I do not see the utility of prolonging a discussion which can lead to no practical result.

AN IDLER IN THE ASTURIAS.

Oviedo, May 17.
Errata in my last letter.—For "Don Manuel de Garvira has seceded," it ought to have been, "he never joined, having denied all participation in the project." In "C. L. W.'s" letter he stated that, by mules, the journey from Aviles to Madrid could be performed in two days. I stated the post was four days en route. He has not controverted this fact. Was it an error of the printer, or the writer, as in the case of the pig-iron made in Catalan forges?

THE BOLDEST ENGINEERING PROJECT OF THE DAY.

SIR,—I have seen, with some surprise, a statement in the newspapers, that Mr. Robert Stephenson has proposed to suspend a sheet-iron viaduct, of a tubular form, fifteen feet in depth, across the Menai Straits, and that such a proposition has met the approval of General Pasley. Surely, these gentlemen have not calculated the effect of a gale of wind, pressing upon such an extent of surface, as it would present and that it would stand, or vibrate securely, under such a pressure, can hardly be expected. Surely, the railway proprietors and directors will pause, before they listen to such a useless expenditure of capital, in a vain attempt to oppose the effects of the elements.—London, May 26.

AN OBSERVER.

THE ATMOSPHERIC PRINCIPLE OF PROPULSION ON RAILWAYS.

An unexpected check has been experienced by the advocates of this much-discussed system, by the decision of the committee (Group E, Lord Worsley, chairman), in the case of the Northumberland atmospheric line, and the Newcastle and Berwick locomotive line. On Monday last, the Chairman announced their decision to be, "that the preamble of the Newcastle and Berwick bill had been proved, and that that of the Northumberland atmospheric line had not been proved." As this (by many unexpected) decision has been come to, and which may influence other committees on atmospheric lines, it would be satisfactory to know on what grounds it has been made, whether from a general dislike to introduce a new system, or from a fair and impartial investigation of the evidence laid before them? If the latter had been the guiding motive, we think the conclusions arrived at by the committee would have been of a different character. In addition to Mr. Samuda, who, though certainly an interested party, gave his evidence clear and straightforward, we have the recorded convictions of Messrs. Brunel, Cubitt, Sopwith, and Gibbons, arrived at after years of close investigation and attention to its merits, that on this particular line of country, the atmospheric principle would realise the greatest speed, safety, and economy; while the evidence of Messrs. Stephenson, Bidder, Hawkesley, and Locke, was of a very general nature, interspersed with theoretical formulae, which cannot be depended on, and which evidence should have been cautiously investigated; the latter gentleman even admitted that he thought it impossible for collisions to take place, except at stations, where they might happen, by one train running into another.—Mr. SAMUDA, in favour of the system, proved that the curves on the line were very objectionable for locomotives, one very sharp one being only 580 feet radius—that with a line of railway on the atmospheric principle they could carry thirty tons, and even going at the rate of forty miles per hour, could travel safely, at a uniform velocity, and stop within 220 yards.—Mr. BRUNEL believed the atmospheric principle was well suited to the character of the country; high speed could be more easily attained, and carriages might be constructed and worked with more ease and safety to passengers. Although flat gradients were generally preferable, on this system undulating gradients, in some instances, are better. It was highly probable, should the committee decide in favour of this principle, that all the northern railways would adopt it, in which case there would be a saving of time, in the proportion of ten for thirteen hours.—Mr. CUBITT had no doubt, but the principle might be carried out with advantage in this instance; had recommended the principle on other lines—viz., the Epsom and Croydon, and the Kentish lines—from the conviction that much greater results could be obtained by this, than by the locomotive system.—Mr. SOPWITH, of Newcastle, a gentleman, whose opinions, from the known caution he maintains in his investigations and conclusions, have ever been respected, most fully concurred in all that had been said by Mr. Brunel and Mr. Cubitt, and believed the line peculiarly well adapted for successfully carrying out the atmospheric principle.—Mr. B. D. GIBBONS, whose evidence might be received with confidence, he being the engineer of the Dublin and Kingstown Railway, stated, that a number of experiments had been tried on that line by engineers of eminence, both British and foreign; that the line worked with the greatest regularity, although the system on the Dalkey extension had not had fair play, particularly from the curves being so bad; the machinery had doubly fulfilled the duties required by the contract, and being engineer of a line, partly atmospheric and partly locomotive, he was in a condition to say, that with regard to facility of getting into motion, for speed, and regularity, the atmospheric principle was by far preferable.

Such is the disinterested evidence in favour of the system, and we think, that unless it can be shown that the adverse decision of the committee was arrived at from valid objections connected with the general merits of the line, from its interference with private property, the surveys shewing the route unsatisfactory, expensive, and difficult, or other sound and reasonable grounds of refusal, further investigation ought to be instituted, or the promoters go at once to the House of Commons, notwithstanding the verdict against them.

MERTHYR TYDIL AND HEREFORD RAILWAY COMPANY; SHREWSBURY, HEREFORD, AND NORTH WALES RAILWAY COMPANY; LIVERPOOL, MANCHESTER, BRISTOL, AND SOUTH WALES RAILWAY COMPANY.—These undertakings, the prospectuses of which appear in our advertising columns, comprehend, in connection with each other, one of the most important lines of railway offered to the public. The report of the railway department of the Board of Trade in favour of the South Wales Railway, now under the consideration of the Legislature, has been the precursor to the projection of lines upon the broad gauge, which, commencing at Neath, and passing through the great iron district, and Abergavenny, will proceed to Hereford, form a junction there with the Shrewsbury, Hereford, and North Wales line, which will be united with the Liverpool, Manchester, Bristol, and South Wales Railway, at Shrewsbury, proceed from thence, via Wem, Whitechurch, Malpas, and Tarporley, then intersect the salt districts of Cheshire, and pass in nearly a direct line to Liverpool, with a branch to Manchester. By these means, a complete, unbroken, chain of wide gauge railway will be formed from Liverpool and Manchester, and the north, to Bristol, South Wales, and the west of England, and, via the Great Western line, to the metropolis, and other districts of the empire. We look at the formation of these several lines, as calculated to confer great benefits upon the mineral districts of Wales; and having, on many occasions, devoted space to the advocacy of the interests of those districts, we purpose, next week, giving a succinct account of this undertaking, and the general advantages which it presents. The Shrewsbury, Hereford, and North Wales Railway Company, the shares in which, we perceive, are to be allotted this day, will be benefited by the arrangements made, and the connection formed with the other lines mentioned.

NORTH LONDON RAILWAY.—Of the numerous railway schemes which the enterprising spirit of the day is almost hourly calling into existence, we do not recollect to have had our attention called to one so full of promise, or conferring such essential benefit on the mercantile and travelling community as that of the North London Junction, the advertisement of which appears in our columns of this day. The North London Junction, by an admirably chosen line, connects the Great Western, at Paddington, with the Birmingham, at Camden-town, and thence proceeds round by Islington Church and the City-road to the bottom of Moorgate-street—thus, in point of fact, extending those two lines, and carrying their termini into the heart of the City. A branch line will connect it, in the same way, with the Eastern Counties, at Shoreditch; whilst another branch will proceed down the Tottenham Extension to Farringdon-street (the other City terminus)—thus commanding, within a few seconds' walk, every quarter of the metropolis. Enough has been said to show the enormous traffic which must pour over this line, but it may be thus analysed:—*Passenger Traffic*—1st, From the whole of England (except the south-eastern, and part of the south), Scotland, Ireland, and Wales. 2d, The local traffic of the metropolis, and its western, northern, and eastern suburbs, which will be constantly passing over the line from the different intermediate stations, and which is now conveyed, it is calculated, in upwards of 100 omnibuses per hour each way. Trains are intended to run every ten minutes. *Goods Traffic*—The whole of the traffic brought by the Great Western, Birmingham, and Eastern Railways, now entirely conveyed, at an enormous cost, by carts and waggons, will be carried by this railway. It was to be expected that such an important scheme would command immediate attention, and a reference to the list of influential directors will show that such has been the case. The name of "Attwood" is a host in itself, and we understand that he takes the greatest interest in its success, and will support it to the utmost. A most careful survey of the line has been made, and, as it judiciously avoids all expensive property, it is certain to be carried without opposition, and within the amount of the estimate.

A railway from Amsterdam to Rotterdam is spoken of.

THE PROVIDENT CLERKS' ASSOCIATION.

The first election of annuitants to this invaluable Institution was celebrated on Wednesday, at a public dinner, at the City of London Tavern. The election of two annuitants took place in the early part of the day—Mr. Thomas Hankey, jun., being in the chair. These annuitants, under the provisions which regulate this Institution, will be entitled to 15*l.* a-year, a sum small in itself, but no small addition to the income of the wife of a deceased clerk, whose emolument dies with himself. It is with regret that we have to state that, in consequence of ill health, the treasurer, John Abel Smith, Esq., M.P., was unable to attend, but his place was most ably filled by his brother, Mr. Martin T. Smith. Although this Institution was founded in 1840, and has attained such success as to leave no doubt of the assurance of its existence, there has been, until Wednesday evening, no celebration of any anniversary by a public dinner. The meeting of Wednesday night must be considered as a stimulus to further exertions on the part of those who are the friends and well-wishers of the Institution, surrounded as they were by some of the first merchants of London, and honoured by the company of the late Governor of the Bank of England (W. Cotton, Esq.), Christopher Pearce, Esq., George Pollard, Esq., Oliver Vile, Esq., J. Fletcher, Esq., Lestock P. Wilson, Esq., D. P. Chapman, Esq., Rev. P. Maitland, James Mackillop, Esq., John Nicholson, Esq., Liverpool; Daniel Mildred, Esq., Thomas Hankey, jun., Esq., E. H. Palmer, Esq., Samuel Gregson, Esq., R. Durant, Esq., Sir John Hall, K.C.H., I. L. Anderson, Esq., James W. Gilbert, Esq., Child, Esq., Dr. Sheridan, William Lyall, Esq., Robert Lyall, Esq., George Hankey, Esq., Thomas Dunn, Esq., C. Barton, Esq., Wm. Smee, Esq., Alfred Smee, Esq., F.R.S., and several other gentlemen of great influence. The ladies too did not forget to grace this auspicious meeting, and their appearance was hailed with the most enthusiastic plaudits. The following gentlemen were unable to attend, but sent letters of apology:—David W. Wire, Esq., Sir John Rae Reid, Sir J. Lubbock, Frederick Huth, Esq., T. Tooke, Esq., F.R.S., Joshua Walker, the Governor, and Deputy Governor, of the Bank of England, John Labouchere, Sir J. Lubbock, G. Lyall, Esq., M.P., S. Majoribanks, Esq., M.P., and Sir J. Pirie, Bart.

This was the fourth anniversary of this invaluable institution, and at a moderate computation not less than 250 to 300 gentlemen sat down to a dinner that did the greatest credit to Messrs. Batho and Breach.

The cloth having been withdrawn, and "Non Nobis Domine" most effectively sung by the vocalists present, Messrs. Sporie, Ransford, Bruton, Lloyd, and Pyne.

The CHAIRMAN proposed the health of the Queen. It had been well said by a noble lord that many were illustrious by courtesy, and others by their deeds; he thought among the latter class they might place their gracious Sovereign at the head. (Great cheering.) She was ennobled not only by her high station, but by the kindness and the feeling that she showed towards her subjects. (Cheers.) The toast was drunk amid the most rapturous applause, after which the National Anthem was sung in excellent style by the vocalists present. The health of the Queen Dowager was drunk with great enthusiasm. Glee—"Lady of Beauty."

The health of Prince Albert and all the Royal Family was drunk amid much applause. Glee—"Star of Brunswick."

"The Army and Navy" was drunk with three times three. Duet—"Soldier and Sailor," by Messrs. Ransford and Lloyd.

The CHAIRMAN then said, that having now done justice to the customary toasts connected with their national feelings, they must now go to business. He had now to propose "Prosperity to the Provident Clerks' Association." He must first express his deep regret that an accident had occurred to his relative, who had ever felt a great interest in the society, which prevented him from taking the chair that evening. He felt it the more because he felt assured that he was far more able than he was to advocate the claims of the society, and to enforce upon those present who were not yet enrolled as its members the value of its usefulness, and the truth of its necessity. (Cheers.) The objects of the Association were two-fold, and though many present were well acquainted with its details, he thought it was his duty to call the attention of the meeting to what the real objects of the society were. The first object was that of a Life Assurance Company, enabling every one that was a subscriber, at a small premium, to insure his life for the benefit of his family and survivors. The second object was, to afford temporary relief in case of temporary difficulty; and, third, permanent relief in case of confirmed illness and decay. It was also part of the system of the society to give permanent annuities to the widows of those clerks who had been subscribers, and who had died in indigence. Now, with respect to the first subscription, it ought to be remembered that it was only one guinea per annum. He thought, of all persons, the clerks of the City of London were the persons requiring most to be benefited. They were all affected. By having an annuity they had an annual income; and they could not forget with their death their remuneration would cease, and their wives and families would be left without any support. The association had been hitherto but little known; it had excited but little interest in the city, and from his own knowledge he was aware, that not only the great houses in the metropolis had taken no notice of it, but they had even told those whom they employed that it was not worthy of their support. (Hear, hear.) He was, however, happy to say that on that day a great exception in that respect had taken place in two cases—(Hear, hear)—in the case of Messrs. Jones, Lloyd, and Co., and the Messrs. Crauford and Co., both of whom had subscribed one hundred guineas each—(Great cheering)—and, when he added that, on the same day, the widows of two clerks had been elected to the receipt of pensions of 15*l.* a year each, he thought that no one would deny to him that the society was worthy of support. (Hear, hear.) He thought he might congratulate the present company on the improved condition of the society. It was, however, to the subscribers, and to themselves alone, that the Association had to look for support. (Hear, hear.) They must not only subscribe themselves, but they must encourage and endeavour to obtain others to do so. (Hear, hear.) It was the object of the society, if possible, to raise the clerks, not only in the metropolis, but in other parts of the country, to a higher grade in society. (Hear.) There was hardly a single body in society that was not influenced by the persons whose interests they were then met to support. (Hear.) He had very sincere pleasure in again calling on them for the greatest exertions on their part in support of this Institution, and in conclusion he begged to propose "Prosperity to the Provident Clerks' Mutual Benefit Association, and may it continue and flourish for ever." (Cheers.)

Mr. THOMAS, the Chairman of the Board of Management, expressed his acknowledgments for the way in which the institution had been spoken of and supported, not only by the chairman, but by the great body of the first commercial houses in the city. (Hear, hear.) The attendance of so many gentlemen of the highest standing in connexion with the commercial and banking interests of London that evening, showed the anxiety which was felt in these quarters for the success of that society. (Hear, hear.) But after all, as had been very properly suggested by their chairman, the great and paramount basis of the association must be the support which it would receive from the clerks themselves.

The CHAIRMAN then proposed "Prosperity to the Bank of England and the East India Company," and, in doing so, he took the opportunity of eulogising the energy and ability of the gentleman whose name he mentioned in connection with the monetary matters of this country, as displayed by him upon recent occasions, when he had to negotiate with the minister upon banking matters. (Hear, hear.) With respect to commerce, all he would say upon such a subject was, that it tended to advance civilisation and promote the general welfare of the community.

Mr. COTTON returned thanks. He did not anticipate that he should ever have another opportunity of returning thanks for a compliment paid to the Bank of England, being no longer its governor. He felt it, however, no little honour to be mentioned in the way that he had been by their worthy chairman. He felt proud in having contributed in any way to place the monetary system of this country on a safe and sound footing. (Hear, hear.) With respect to the object of the meeting, he could assure them that he felt a deep interest in it, and he should be most happy if any act of his would have the effect of advancing its interests, and promoting its prosperity. (Cheers.) He had no doubt that under these operations England would stand forth as the greatest mart of commerce in the world. (Cheers.) It was true that he did not require clerks now, he wished he did—(Cheers)—but he had been placed in the situation in which he knew the value of able and excellent clerks. (Cheers.) He had been, while Governor of the Bank of England, anxious, as well of his brother directors, to do all they could for the comfort and happiness of the clerks in that establishment. (Great cheering.) He was sure that those who were connected with the commercial world must have, and had the greatest interest in the comfort and happiness of those whom they employed, and that no exertion would be wanting on their part to enable them to keep up that station in society which they now held. (Cheers.) He hoped to see them removed to a higher one, and if any exertion of his could effect such an object, it would be the happiest moment of his life. (Great cheering.)

Mr. THOMSON HANKEY, jun., then proposed the health of the Chairman, which was drunk most enthusiastically.

The CHAIRMAN returned thanks. He was sorry that illness had prevented the attendance of his brother, but he felt proud in stating that he was the first to put his hand to paper with regard to the promotion of this excellent Institution. (Great cheering.) and if he (the Chairman) had assisted in forwarding the hilarity of the meeting, he had received the only reward he asked for. (Cheers.) Song, "The Merry Gipsy Band."

The CHAIRMAN then gave the next toast, which was "Sir J. Hall and the Stewards." Sir J. HALL returned thanks. It was important, in his opinion, to keep up the spirit of the meeting of that day, and in order to do so, he thought the best course to be pursued would be to put down the names of the Stewards for the next year. (Great cheering.) The toast having been duly responded to,

The CHAIRMAN proposed "The health of Sir J. Hall and the Stewards elect." (Great cheering.) Sir J. HALL again returned thanks.

Mr. THOMSON HANKEY then rose to propose the toast of "The Press." In doing so he felt bound to state that the society had not more sincere friends than that body. (Great cheering.) The press of London had always pointed out the benefits that were to be derived from the institution, and they had done more, they had pointed out the course that ought to be pursued by its members. (Great cheering.) He thought that the association owed a deep debt of gratitude to those gentlemen who unsought had given so favourable an opinion of the institution and its merits. (Cheers.) There were no doubt many members of the press present, but he could not allude to one in particular, who sat at his left hand, because he had done all he could for the benefit of the institution. (Great cheering.) He alluded to Dr. Sheridan, the editor of the *Morning Advertiser*, a man whom he had no doubt in saying was the friend of humanity, and the intelligent advocate for the happiness of the whole human race. (Cheers.)

The "Health of Dr. Sheridan and the Press," was then drunk amid the most enthusiastic cheers.—Dr. Sheridan then rose to return thanks. He was proud of the manner in which his name had been associated on that occasion with the press. It was a powerful engine—one that was calculated to do great good if it were properly employed—and one that might do great evil if misapplied. (Hear, hear.) He begged in the outset to correct an error which had been inadvertently made by the hon. gentleman who had proposed the toast. He was not so fortunate as to be the proprietor of the *Morning Advertiser*—he wished he were so. (A laugh.) He only held the humble office of editor of that journal, but in that capacity, in having the opportunity of giving free expression to those opinions and principles which, in his conviction, were best calculated to advocate the political, moral, and social improvement of mankind, he felt more pride than if he were the proprietor of the most profitable journal of the day, which would prove ready to sell its influence to the highest bidder, and sacrifice its high mission to individual purposes. (Hear, hear.)

He felt proud of being surrounded at that festive board by gentlemen who were the representatives of the commerce of England, and to whom England was mainly indebted for the proud position which she now occupied among the nations of the earth. (Hear, hear.) The press had an important duty to perform. It was the embodiment of the public sentiment, and whatever obloquy it might suffer under, or whatever slight it might receive, if the gentlemen belonging to it only did their duty by it, it would be in a different position from that in which it was at present. (Hear, hear.) It was not merely the editors of the public journals that had arduous duties to perform in connexion with them. As with the drama so with the press—there were different departments. The abilities of Shakespeare were and are indisputable, but as a performer he was not distinguished. Garrick and Keen, incomparable as actors, never added to their fame in the capacity of authors. And so with the press. There were arduous and honourable duties to be performed in its several departments. The reporters of these journals—especially the Parliamentary reporters had onerous duties to execute. (Hear, hear.) Many of these gentlemen, stimulated by a glorious self-devotion, did not hesitate to leap from the gallery into the body of the House of Commons—to rush through it into the House of Lords, and there, even at the present moment, threaten to assault the woolsack itself. (Hear, hear, and loud laughter.) Yet these individuals neglected and forgot that press which was the very source from which their greatness sprang. (Hear.) He begged again to thank them for the compliment which they had paid him in associating his name with the press, and to assure them that no effort on his part should be wanting in future to merit the honour that they had that evening conferred upon him. (Hear.)

"The Health of the Ladies" was drunk amid great cheering. The Chairman then left the chair, which was taken by Mr. Thomas, the Chairman of the Board of Management, who, upon assuming the office, stated that there was one toast that had been omitted by their late worthy Chairman, and that was, "The Health of the Medical Officers of the Institution." He considered that the Association was under great obligations to them for having performed most onerous duties for the last four years gratuitously. (Cheers.) The toast was given amid loud cheers.

Mr. SMEE returned thanks. He believed that there was no Institution more deserving of support than the present, and his earnest hope was that in the words of Scripture, "it might last from generation to generation." (Great cheering.) In conclusion, he begged to propose the health of their now Chairman, without whose exertions he believed they would not have had the dinner they had had that day, and that the Institution would have long ceased to exist, and have become only a subject for the historian.

The toast, together with that of the health of the Managing Committee, was drunk amid great applause.

The CHAIRMAN returned thanks. He believed that the foundation on which the society rested was a firm, a solid, and substantial one, and that the exertions that had been made on his part, and those connected with him were only of secondary consideration. (Cries of "No, no.") He thought that now the value of the institution had not only been appreciated by the clerks themselves, but by the great houses in the City of London. (Cheers.) Although the progress of the Institution had been slow, he believed it was destined to be one of the largest and most influential in the City of London. (Cheers.) He could assure them that the Committee of Management had worked for it—and they had not only lost their time but their money. (Laughter.) He begged to return his sincere thanks to the meeting on behalf of those who were associated with him and himself. (Cheers.)

Mr. THOMAS proposed "The health of the Secretary, Dr. Mullinder," and eulogised the ability and energy of that gentleman. They could never too highly appreciate the value of that gentleman's services. (Cheers.) Dr. MULLINDER, in expressing his acknowledgments, said that the compliment conferred on him was as great a one as he had ever received. (Hear.) Character was money—but money would never make character. (Hear.) He trusted that the exertions which he heretofore displayed in their cause would only be a prelude to what was to follow. (Hear, hear.)

The Chairman of the Board of Management, in the course of the evening, announced that the subscription amounted to upwards of 1,000*l.* Amongst the subscribers were J. A. Smith, M.P., 25 guineas, Baron Rothschild 25*l.*, Messrs. Hankey 10 guineas, Sir J. Hall 5*l.*, the Guarantee Society 10 guineas, Messrs. Crauford and Co. 100*l.*, Jones, Lloyd, and Jones 100*l.*, Overend, Gurney, and Co. 50 guineas, Smith, Payne, and Smith 50 guineas, Dr. Sheridan, two guineas annually, Palmer, Mackillop, and Co. 20 guineas, Thomas Hankey, jun., Esq., 10 guineas, Thomas Tooke, Esq., 5 guineas, Coutts and Co. 10 guineas, Mangles and Co. 10 guineas, J. Chapman and Co. 10 guineas, Curling and Co. 10 guineas, J. Blyth, Esq., 10 guineas, Pearce and Co. 10 guineas, William Lyall, Esq., 10 guineas. The evening was spent in a most agreeable manner, and the vocalists, Messrs. Pyne, Lloyd, Sporie, and Ransford, together with Mr. Bruton, under whose direction the other gentlemen were, contributed by their efforts to the enjoyment. We must not forget, on concluding the report, to speak of the efficient manner in which the younger Toole so ably performed the duty of toast-master. It put us in mind of his father's juvenile days.

WORCESTER, TENBURY, AND LUDLOW RAILWAY.—This is a proposal for an independent line of railway from the city of Worcester, passing by Tenbury, and terminating at Ludlow, and one which will, in all probability, form part of a great trunk line from London to Portludlow—the nearest and most direct route to Ireland. Passing for the greatest part of its length through the Valley of the Teme at a water level, and a country where no difficulties exist, its construction will probably be effected at as low a cost as any line in the kingdom; and, embracing a productive, wealthy, and populous agricultural district, with the extensive manufactures of Worcester, this line offers the most unequivocal security for the investment of capital, and will, probably, eventually be the high road from London to Dublin. A very satisfactory feature in this undertaking is, the unqualified approbation of its objects expressed by the most influential landowners on the line, and others locally interested, who will render it all the support in their power. The capital proposed is 400,000*l.* in 800 shares, of 500*l.* each.

SOUTHAMPTON AND SALISBURY JUNCTION RAILWAY, for connecting the ENGLISH and the BRISTOL CHANNELS, by the broad gauge throughout.—Provisionally registered.

PROVISIONAL COMMITTEE.
Edward Sherman, Esq., director of the Direct Northern and Lonsdale and Lancashire Railways, London
William Hardgett, Esq., director of Lonsdale and Jemeppe, and Italian and Austrian Railway, and Britannia Life Insurance Company, Old Broad-street, London
William Bradley, Esq., director of the Sheffield and Manchester and Huddersfield and Sheffield Railway, Sheffield
Mills Coventry, Esq., director of the Britannia Life Insurance Co., London
George Calvert Holland, Esq., director of the Great Grimsby and Sheffield, and Huddersfield and Manchester Railway, Sheffield
Russell Gladstone, Esq., 25, St. James's-street, London
George Hunt, Esq., banker, Southampton
Edward Lomer, Esq., merchant, ditto
William Betts, Esq., director of the Namur and Liege Railway, Bevia Mount, Southampton
Captain William Henry Trollope, Landford House, Plaitford
Edward Coxwell, Esq., Eling, Southampton
William Bastow, Esq., Surrey-place, Old Kent-road, London
Richard Harris Purcell, Esq., Cambridge-street, Hyde-park, London
E. E. P. Kelsey, Esq., Mayor of Salisbury
William Ward Simpson, Esq., Norwood, Surrey
Rev. Samuel Cross, Leverington, Wilsheath
Richard D'Ewes, Esq., Knaresborough, Yorkshire
J. Jackson, Esq., merchant, Leeds
John Henson, Esq., Macquarie, Esq., Hampton Court
Henry Cornfoot, Esq., director of Commercial Bank, Cophthall-court
John Howell, Esq., Beaumont Villa, Shepherd's Bush
Col. Robert Douglas, director of Trent Valley, United Service Club, London
Frederick William Caldwell, Esq., Fitzroy-park, Highgate
(With power to add to their number.)

JOINT SOLICITORS.
John Bell, 23, Craven-street, Strand, London; W. H. Maberley, Southampton. The object of this undertaking is to afford to the important and rising port of Southampton a direct and uninterrupted railway communication with Salisbury, Bath, Bristol, and the iron and coal districts of Gloucestershire, and South Wales. This is proposed to be effected by a line of railway from Southampton to Salisbury, constructed on the broad gauge, and forming a junction there with the line projected by the Great Western Company, by which means this much required chain of communication through Wiltshire and Somersetshire will be completed. This measure receives the influential local support of the leading gentlemen of the towns of Southampton, Salisbury, and the country through which the proposed line passes, and who are impressed with its great advantages, and the conviction of its necessity. By this measure, the English and Bristol Channels will be brought into close connection, affording great resources both to Southampton and Bristol, at the same time establishing a means of mutual and valuable interchange of commerce to the towns and districts traversed.

The existing traffic through these districts is known to be considerable, and is vouched for by the fact that on the original projection of the Wilt and Somerset Railway, from or near Bath to Salisbury, the Great Western Company entered into an engagement to lease that line, at the rate of 4 per cent., with the advantages of a moiety of the surplus profits. The completion of this line, therefore, by a direct connection with a principal port, must, it is confidently assumed, secure to an extension line the benefit of increased traffic, and to the shareholders an ample return. Independent of the well-established traffic, which the proposed line insures, this demand for that traffic, which is, at present, subject to the expense, delay, and uncertainty of carriage by coasting vessels.

It is proposed that this line, which passes through land of little value, shall join the Wilts, Somerset, and Weymouth Railway at Fisherton Anger, and proceed by, or near to, Downton, Plaitford, Redbridge, Millbrook, to the Royal Pier at Southampton, convenient to which it is proposed to erect a spacious terminus and terrace on the present waste shore, the cost of which is included in the estimate. It is intended to make such arrangements with the Pier Company as will admit of the numerous steam and other vessels frequenting the pier, and trading with the Channel Islands and along the coast, to land their passengers and goods on the line at once. The completion of this line will enable a system of the electric telegraph to be established between the two channels.

A careful examination of the country has been made, and it presents no engineering difficulties, and the surveys are in course of completion. Detailed prospectuses will be issued in a few days; in the meantime, forms of application for shares may be had of Williams, Chevin, and Co., 30, Bucklersbury, London.

CORK, BLACKROCK, PASSAGE, AND MONKSTOWN RAILWAY.—Prospectus of a RAILWAY between the CITY OF CORK and the deep water at PASSAGE WEST, through the populous district of BLACKROCK, with power to make an EXTENSION TO MONKSTOWN, with the prospect of an eventual EXTENSION THROUGH CARRIGLINE TO KINSALE. (Provisionally Registered.)

Length of line to Passage, through Blackrock, six statute miles. Proposed capital £120,000, in 6000 shares, of £20 each.—Deposit £1 2*s.* per share. No shareholder to be liable beyond the amount of his subscription. A power will be taken to allow interest at the rate of 4 per cent. per annum on deposits and future calls; and no further deposit or call to be made until the Act of Parliament is obtained.

PROVISIONAL COMMITTEE.
SAMUEL LANE, Esq., Frankfield, Cork, Chairman.
THOMAS LYONS, Esq., Sunville, Cork, Alderman, Deputy-Chairman.
Joseph Anderson, Esq., the Holme, Regent's-park, London
Sir George Gould, Bart. Old Court, Deputy-Lieutenant
Daniel Leahy, Esq., Shanahill House, Deputy-Lieutenant
Francis Bernard Beamish, Esq., J.P., Cork, Alderman
Henry Valentine Gold, Esq., Old Court, Deputy-Lieutenant
William Coppinger, Esq., Barry's Court
Sir John Jefferyes, Esq., J.P., Blarney Castle
Robert O'Callaghan Newman, Esq., Dundonian Castle, Blackrock
William Fagan, Esq., Feltrim, Alderman
Noble Johnson, Esq., Rockenham, Passage West
John Robert Burke, Esq., Esq., Prospect, merchant
George Lawrence, Esq., Cork, merchant
James Tobin, Esq., Rocklodge, Monkstown
Jas. Roche, Esq., J.P., Woburn place, Cork, director of the National Bank
Henry Osborne Seward, Esq., J.P., Cork and Douglas
Daniel Murphy, Esq., Belleville, Cork, Alderman
William Klissane Rogers, Esq., late High Sheriff, Cork
Simeon H. Hardy, Esq., Dublin, director of the Great Southern and Western Railway
William Hickie, Esq., J.P., Jane Mount, Glanmire
Nicholas Marshall Cummins, Esq., J.P., Ann Mount, Glanmire
Francis Lyons, Esq., M.D., Alderman, South-terrace, Cork
Wm. Lane, Esq., Vernon Mount, director of the Provincial Bank, Cork
John Gould Esq., Sydney-place, merchant
Charles Sugrue, Esq., Mardyke-parade
Edward Hackett, Esq., Sydney-place, Alderman
James Minnear, Esq., Mardyke-parade
John Coppinger, Esq., M.D., Camden-place, Cork
D. Meagher, Esq., Treasurer to the Corporation, Summer-hill, Cork
James Denny, Esq., Richmond House, Cork
David Cogan, Esq., Parkgarraffe, Monkstown
Edmund Burke, Esq., Prospect
John Harley, Esq., Clifton-terrace, Alderman
Robert Hall, Esq., Lapps Island, merchant
James Beale, Esq., Patrick's-hill, merchant
(With power to add to their number.)
Consulting Engineer—Sir John Macneil.
Acting Engineer—W. A. Treney, Esq.
Architect—Alexander Deane, Esq.
Standing Counsel—Richard J. Lane, Esq.
Solicitors—N. D. Murphy and R. J. Coppinger, Cork
Secretaries—Joseph Dunbar and Martin H. Conway, Esqs.

BANKERS.
The Bank of Ireland and its Branches; the National Bank of Ireland and its Branches; the Provincial Bank of Ireland and its Branches.

The object of the proposed undertaking is to make a direct line of railway from the city of Cork through Blackrock to the deep water at Passage West, and Monkstown, and to afford the opportunity to the proprietors of the late Cork and Passage Railway of becoming participants in the advantages of the present undertaking.

It is intended to apply for a revival of the late Act, or to make it the foundation for an Act to incorporate the present company so far as the alterations which since that time have taken place will permit. There cannot be any reasonable doubt but that such an application will meet with the favour and sanction of the Board of Trade, and of Parliament; while, at the same time, it is the intention of the corporation, and of the public boards of the city of Cork, to promote this line in preference to any other.

It is now a well ascertained fact that the cost of the present improved system of construction, &c., may be calculated at a much lower figure than when the estimates were prepared and taken for the late Cork and Passage Railway, while it is a matter of perfect notoriety, that the passenger traffic since that period has been such as fully to warrant in any calculation an increase of one-fourth.

By the returns and calculations then made, it appears that the annual amount of net income would have been equivalent to about 29 per cent. on the capital then proposed to be raised.

It is, however, perfectly obvious that, in the undertaking now proposed, as contrasted with the foregoing, the return of profit would be much greater, and the expense of construction being very considerably diminished, the required capital would consequently be smaller; and, therefore, without holding out any extravagant notions of extraordinary profits, the provisional directors, after mature deliberation, and making due allowance for moderate charges, have confidently calculated on a return of at least 12 per cent. on the capital now to be invested.

All the valuable documents, maps, estimates, and calculations relating to, or connected with, the late Cork and Passage Railway Company, are now in the possession of the present directors, and careful additional surveys, founded upon those which were taken by, and under the direction and superintendence of, Mr. Vignoles, are now being made, and in process of completion. From the anticipated result of these revised surveys, and from the great additions which have since that time been made to the navigation wall, and considering the improvements which have taken place in the construction and laying down of rails, &c., the directors feel confident in being able to give an assurance that the foregoing estimate of profits will be considerably increased.

It is needless to observe upon the eligibility of the river line as contrasted with an inland one. The reports of the engineers, and the decided adoption of the river

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FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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[SUPPLEMENT—GRATIS.]

ON METHODS OF DETERMINING THE VELOCITY OF THE PISTON OF A STEAM-ENGINE, AT ANY PART OF THE STROKE.

BY JAMES A. EMSLIE, C.E.

The action of steam, particularly in the Cornish engines, has been by our most able experimentalists investigated. The indicator, constructed by the great Watt, has been used most successfully, to exhibit the varying pressures of steam, both in the cylinder and boiler, at different portions of the stroke; but no instrument of a sufficiently correct nature, or minute in its indications, has as yet been brought into general use, to show in what manner, and to what extent, the piston of a steam-engine becomes influenced by the varying pressures to which it is subject, particularly in the engine in which steam is used expansively.

An instrument to indicate with great minuteness and accuracy this portion of the operation of a steam-engine has, on all hands, been considered to be a great desideratum, and several plans have consequently been submitted to the scientific inquirer in this branch of mechanical philosophy.

The invention of the late Capt. Richard Tregaskis, published in the *Tenth Annual Report of the Royal Cornwall Polytechnic Society*, must be admitted to be an exceedingly ingenious contrivance, but certainly not capable, upon the data at present assigned to it, of indicating results with requisite correctness. The plan has, moreover, the disadvantage of requiring, in its use, a nicety of manipulation, which few but those who have time, patience, and considerable experience, can employ, with a prospect of a successful issue to their experiments. It is probably not generally known that the instrument of the late Captain Richard Tregaskis derives its indications of time from the falling of sand, as in the hour-glass, through a minute aperture, into a set of receivers, revolving immediately under the sand case or box, and the space, from the receivers being so proportioned as to answer to given lengths of the piston rod: that is, in one stroke of the piston, the receivers perform one entire revolution, and each receiver, in its turn, coming under the aperture of the sand-box, receives more or less sand therefrom, as the speed of the piston, and consequently also that of the receiver under the sand-box, may determine.

It was computed that the falling of seventeen grains of sand from this instrument equalled one second of time, and therefore, supposing, for instance, that the stroke of the piston terminated at the completion of the second, the seventeen grains of sand indicating that second would have been divided amongst the receivers in the proportion of their speed under the aperture of the sand-box; each receiver showing, therefore, by its contents, the time each portion of the piston, as represented by the receivers, took in the performance of its duty. Theoretically speaking, and in the whole, representing one complete second of time, the operation may be pretty correct; but it will, with very little application, be seen, that the divisions of the time intended cannot be practically considered as more than an approximation to the asserted results, or to what should be the truth. For, although seventeen grains of sand may fall with great regularity through a given aperture in a second of time, still that circumstance gives no definite proof that in half a second of time no more than half the quantity asserted for one second should be discharged; in fact, upon the simplest reasoning, we must come to entirely a contrary conclusion. On the commencement of the discharge of sand, the weight thereof being seventeen grains, each portion beyond that on the point of leaving the box must accelerate the latter's discharge, by the pressure afforded to it by the weight of the whole; consequently the discharge of sand must diminish in speed as that article becomes diminished in quantity in the sand-box. As has been before stated, seventeen grains of sand, running through a given aperture, may take up in so doing a second of time, but it will be seen to be impossible, upon the reasoning just given, that the divisibility of time can be effected to any extent, or to any amount of certainty or truth, by this operation. Deeming this exposition to be good, the value of the invention, with all its merits as to originality, &c., must be placed as but of little account.

I have made mention of the invention of the late Captain Richard Tregaskis thus particularly, as being the first plan of the kind before the public possessing any merit, and with the desire of placing it (taking, as it does, the first position at the present time,) in juxtaposition with an invention of mine, for effecting a similar end—viz., to determine the velocity of a piston at any part of the stroke, in the working of a steam-engine.

My attention has been recently directed to a notice, which appeared in the *Glasgow Practical Mechanic and Engineers' Magazine*, of the 16th Dec., 1843, of an invention for determining the point in question, by W. A. Rous, formerly a working engineer in Cornwall, a description of the same having been laid before the last meeting of the British Association, held at Cork, by the celebrated Mr. John Taylor. The similarity it seems to bear, from what I can understand from the brief notice alluded to, to an invention of mine, with the precise objects, made so far back as February, 1840, and submitted to Josiah Parkes, Esq., C.E.—in whose hands the model still remains—last June twelve months, has led me, from the respectable quarter the paper laid before the British Association emanates, (not, therefore, doubting the originality of thought on the part of Mr. A. Rous,) to question, through the medium of the public prints, simply the point of priority. This, from the evidence I possess, I confidently expect will fall to me. With the merits of the invention, this, however, can but have little to do.

The idea of first employing a pendulum, armed with a pencil, vibrating any given time, impinging upon a moveable card, so as to leave behind it on each vibration a mark, occurred to me about the time I have mentioned, as a method of determining the correct datum line in making tidal surveys. A box of about six inches square was taken, its height being a few feet more than the greatest rise of the tide. The bottom of the box was turned upward, and much contracted, and within the box a light substance, such, for instance, as cork, was placed, and upon it a stiff card or board, of but little weight, and of such a nature as to receive readily the mark of the pencil upon the vibrating of the pendulum. This pendulum was attached to clock-work, which was placed near the top of the box, the box being fitted with a cap, as a protection to the machinery against the weather; the card mentioned being of equal height to the rise of the tide. In use, this apparatus was placed in the water, and firmly staked,—the turned up part of the box being the end immersed, and care taken that the pendulum of the clock, though always in reach of the card, was still above the reach of the water at the highest point of its rise. Supposing the water at the lowest point just commencing to flow, the top of the card would then be in reach of the pendulum; as the tide increased in its rise, the card affixed to the cork-board would be consequently elevated in the box, and as each vibration of the pendulum is noted upon the card, the distance between the marks would indicate precisely the space passed by the card, and consequently the height the tide had risen in the time given by the pendulum. The clock being set to the time of the party making the soundings, consequently each mark of the card gave the advance of time in the measure of the pendulum's vibrations; and the time being taken on making a sounding, and the height of the water being ascertained from the card at that particular time, the addition or deduction to the depth of the sounding taken, necessary to obtain correctly the datum line, was easily to be observed and recorded.

From this apparatus it occurred to me to apply the principle to determining the velocity of the piston of a steam-engine at any portion of the stroke, and this I accomplished with considerable success. I firstly applied the card and pendulum as has just been stated—that is, I affixed the card to the head of the piston-rod, and at the summit of its stroke the pendulum

was placed so that in its vibrations the pencil attached thereto touched the card. The divisibility of time and space was in this method so very limited, however, that some fresh arrangement became necessary to make the principle of any avail. It then occurred to me to let the pencil, on the vibrations of the pendulum, continually mark upon the card, by placing the pencil in part of the pendulum-ball, and the card in front of that; but this I rejected for a while, finding that the vibrations of the pendulum were impeded by the friction of the point of the pencil on the face of the card. I then armed the pendulum with a pencil on each edge, and placed two cards at such distances from each other that the pendulum on each vibration touched alternately either card, obtaining thereby marks on either card of the time vibrated, which gave, of course, the exact space passed through by the piston in the time of a vibration.

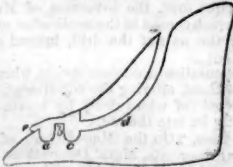
The method I have just mentioned as having rejected, I, however, had again recourse to, as I found that the principle I have last described did not give me a sufficient divisibility of space and time. It will be remembered, that the principle I have just named as having re-adopted, consisted of a method of employing a pencil, by fixing it to the pendulum, so that it constantly vibrated upon the surface of the card, and was rejected on account of the friction of the pencil over the surface of the paper injuring the right beating of time by the pendulum; this, however, on its re-adoption, I remedied in the following manner:—To the pendulum ball, on its flat and inner surface—that is, on the surface next the card—I, first, affixed a light spiral spring; and to the end of this spring, in a socket, a portion of a soft dark pencil. I then found that, by employing drawing, or Bristol board, with a good surface, that the hindrance to the right beating of the pendulum, on account of the method of thus employing the pencil thereon, was not in any way perceptible; and then, consequently, I had got over the difficulty which prevented me obtaining and recording, with the greatest minuteness and accuracy, the time (which can now be done), even to the thousandth, or even smaller, part of a second, a portion or portions of the piston-rod, or any moveable object, took in performing, passing through, or by, a given space.

The machinery for accomplishing this consists simply of the pendulum, as before named, either vibrating by itself or in connection with clock-work; and a card attached to the piston head, and made to run in guides to keep it in a line with the working of the piston. The annexed diagram will show the markings on the card—the increasing horizontal and vertical lines will increase the divisions of time and space to any extent; of course, the card will require to be ruled with horizontal and vertical lines previous to use. The oblique lines are those made by the pencil.

In inquiring into the action of steam, no description of apparatus could give more certain or useful results than the one lately described. With the indicator, and, in the hands of a skilful operator, these instruments will enable the experimentalist to finally dispose of many subjects of discussion in connection with the steam-engine, and will allow him to pursue to a successful issue numerous investigations in many branches of mechanical philosophy.

ANCIENT FURNACE IN SPAIN.

It is a fact generally known, that the discovery of the Americas, and the rich influx of the precious metals from those parts, caused the Spaniards to neglect their native mineral deposits, which have lain dormant till within the last few years, and are now for the most part in the hands of foreign companies. In some provinces there are traditions that the Romans, and, subsequently, the Moors, obtained a great quantity of gold, especially in the province of Asturias; modern inquirers have not been able to discover any veins of this precious metal; an old furnace, said to have been used by the Moors in the reduction of gold, was last autumn opened in that province. The subjoined sketch will enable the reader more clearly to understand it. The two chambers, *a* and *c*, are dug in the earth, about three feet deep and two wide; *b* is a communication about six inches square; *d* is a flue, or chimney, about one foot wide, and carried up the hill for about forty feet—they are all lined with sandstone. Apparently, the charge, which would have been about 1 cwt., was placed in the second chamber, *c*—the fuel laid in the first, *a*, and a blast, probably



worked by hand bellows from without, *e*, played upon the fuel until the metal was in a state of fusion. The inner chamber was covered with a flat stone, the outer with another, perforated with six holes about an inch in diameter. Something similar to this Aikin mentions as being used by the Hindoos of Mysore in reducing iron. At the bottom of the second chamber, were found some slags, principally composed of silicate of iron, with here and there spots of copper regulus, thereby proving that that metal, and not gold, had been worked there. No one could give any account at what period it had been worked, but it was generally assigned to the Roman era; this is highly probable. The small bronze statues, and other ornaments of the ancients, being very expensive, on account of the imperfect manipulation of the metal, would render them at that period as dear as gold, which is excessively soft, and ductile to work—and hence is possibly derived the tradition, that the precious metals have been worked in that province.

NEW PATENT WATER GAS.—Having last evening visited the house of Mr. Kelly, 45, Upper Gloucester-street, to test the merits of this important invention, we were much pleased at the simplicity of the apparatus, and the brilliancy of the light, which burns without the slightest smoke or smell. As an instance of its adaptation to gentlemen's mansions, shops, &c., in Mr. Kelly's house there can be seen a brilliant gas jet burning within ten inches of an enriched cornice in two places, and although burning from seven until nine o'clock each night for the last ten, not the slightest stain can be perceived. The gas is made from a retort set in the area, with a flue from the furnace to the kitchen chimney; it forms a bench similar to that of a hot hearth in a gentleman's kitchen, over which two cans are placed, one of which is filled with tar or resin oil, and the other with pure water. Each can is fitted with a small straight cock, and by the simultaneous dropping of the water and oil into syphons connected with the retorts, the gas is generated, and passed off by an inch gun-barrel pipe into the gasometer, which is placed under the landing of the hall-door, a distance of about sixty feet. This gasometer stands in a tank filled with water, and according as the vapour or gas enters, it rises and supplies the pipes communicating with the different jets or burners, and produces a light we have never seen equalled. To large consumers of gas, and country gentlemen with large mansions and establishments, we recommend a visit to Mr. Kelly's, and in fact to all who wish a safe, clean, and brilliant light, at an expense of 50 per cent. under the present ordinary prices of coal gas.—*Dublin Times*.

THE PRACTICAL MINERS' GUIDE.

We proceed, according to the promise given in our notice of this work in a former Journal, to give copious extracts from its details. Part I., consisting merely of illustrations in trigonometry, with the working out of examples in sinking shafts, driving, &c., is not available for our purpose; we, therefore, commence with giving some of the most approved methods for the assays of ore. For silver ore take 1 oz. avoirdupois, pulverised and sifted through a fine hair sieve, then well mixed in the scoop with red lead 2 oz., red tartar, 5 dwts., nitre, 9 dwts., borax, 4 dwts., lime, 1/2 oz., salt, 2 oz., fluor spar, bruised, 1/2 oz. (as red lead generally contains a small portion of silver, its proportion should first be ascertained, to obtain a true assay). It is then to be smelted in a wrought-iron crucible; but if this cannot be obtained, and a stone one is used, 1 oz. of iron must be added; the sample will melt in a good heat in about twelve minutes if the ore is tolerably free from sulphur and iron, if not, it will require a little longer. When the sample has become quite fluid, take it out, and pour it in a mould prepared to receive it, having been anointed on the inside with grease or oil. The process of pouring out should be done quickly to prevent a chill, and if the operation has been properly managed, the lump will separate clean from the slag at a slight blow; but if the metal and dross stick together the assay is imperfect; or should the sample appear stubborn, and refuse to melt, in both these cases a little more nitre should be added. Care should be taken that the heat is neither too low or too high, or the assays will be irremediable. For the refining process four-fifths of bone ashes, to one-fifth of fern ashes, are used, damped and well beaten into an iron ring, 2 1/2 inches deep and 6 inches in circumference, which should be put into the fire an hour or more before the refining process is begun, to prevent the agitation and springing over of the silver, and consequent loss of the assay. When the assay is thoroughly pure, it will assume a globular shape, set or become fixed, and in a few moments will throw up sprouts or branches from the top. Take out the test, weigh the prillion, find the value for a ton of ore in proportion to its weight, and the operation is complete. [N.B.—The fire should be gradually increased towards the close of the process.]

ASSAY OF COPPER ORE.—Take 400 grains, pounded well in a mortar, and sifted through a fine hair sieve; put it in an earthen crucible, and keep it frequently stirred in the furnace, with an iron rod or spafula; the sulphur will be seen to go off in white fumes, and the process must be continued until this evaporation ceases, or nearly so, which will generally be in from one to two hours. Great attention must be paid during this operation, in order that a standard regal may be obtained, and there will be no danger of producing a true assay. The ore, during the process, must be kept in a free sandy state, which will be effected by stirring, and constant regulation of the degree of heat. If the ore becomes moist, and begins to stick to the crucible, it must be immediately taken out of the fire, and stirred a short time, until this effect has ceased, and then returned. When it has become tolerably free from sulphur, it may be discovered by the evaporation having nearly ceased (it is only very stubborn ores which require such effectual roasting or calcining); this being observed, take it out of the fire, and let it gradually cool in the crucible, and if, when cold, the upper part appears red or brown, and the under part black, it is a proof of its having been well calcined. This being done, add the standard flux—viz., borax, 5 dwts.; lime, 1 1/2 lades-full; and pulverised fluor spar, 1 ladle; the common assaying ladle being 1/2 inch deep, and 3/4 inch in diameter. A good and standard regal is brown, full of cracks, and fissures, and spherical. Should it come out flat, it is a sign it is not well calcined, and should be thrown back with a small portion more nitre; should it come out low or coarse, with a cinder-like fracture, also throw it back, with additional nitre. If too fine, with a metallic fracture, return it, with a ladle of sulphur; in either case, let it work well for some time, and in all probability a standard regal will be produced. A regal may be considered good which will produce from 8 to 12 in 20, and this quality is easily known by an inspection; but if less than 8, or above 12, it would be better to reject it, and begin the process anew with a fresh sample. Grey, black, and green ores, require a proportion of sulphur, in order to throw them back, as they contain too little of this mineral in their composition to produce a good assay. Should a regal be too fine, put less nitre in refining, and, as a general rule, the coarser it is the more nitre will be required.

FINING PROCESS.—Pound, or pulverise, the regal, put it in an earthen fining pot, and recalcine it until perfectly sweet (free from sulphur), which may be discovered by the appearance and fumigation—then add nitre, 3 dwts.; red tartar, 10 dwts.; borax, 5 dwts.; salt, 2 lades; covered or sprinkled with salt, which brings down the assay into coarse copper. Should it come out with a transparent, or horn-like, appearance, add 4 dwts. of nitre, and a ladle of salt, letting it work well in the fire; should it come out black, plate it, and if the black flies off in flakes, it is a proof it has not been sufficiently calcined, if not, its colour may be attributed to lead, or a mixture of metals, the former defect renders the assay hopeless; should it come out clean, put the assay in the pot without flux, and when fluid, take out the pot, and shake it gently until the surface assumes an azure or blue appearance, then put refining flux in the month or fore part of the scoop and the salt behind, throw it in with the assay, and let it melt until the flux settles well down, then pour the copper into one mould, and the slag or scoria into another, return the slag into the same pot with two lades of red tartar, and let it melt well down, take out the prillion, and weigh it with the lump for the produce, and the work will be complete.

ASSAY OF LEAD ORE.—Take one ounce avoirdupois of the ore to be assayed, to which add the flux, consisting of red tartar, 1 ladle; fluor spar, 1 ladle; salt, 2 lades; borax, 1/2 ditto; nitre, 1/2 ditto; lime, 1/2 ditto; mix well, and put in an iron crucible, stir it with an iron rod during the latter part of the process; in about five minutes, in a brisk heat, the sample will be down, if the crucible was red hot when the assay was thrown in, which should always be the case. When the assay is ready, it may be known by the grating of the rod against the bottom of the crucible in stirring; it should be then immediately poured out, and the metal will separate clean from the slag in a good assay. To discover the proportion of silver which lead ore contains, the above method must be first used, and the assay then tested precisely the same way as described for refining a silver sample, previously explained; the lead will go off in vapour, and the silver remain in the test.

TIN ORE.—For two ounces black tin, take culm 1/2 weight of samples, and borax, 4 dwts.; if the ore contains a large proportion of iron, add more culm, and if very stubborn, add a small portion of pulverised fluor spar; when the sample is properly down or flowed, the surface in the crucible will be perfectly smooth and motionless; in a strong heat, this will occur in about twelve minutes. When taken out of the fire, stir it well with an iron rod before you pour it; afterwards scrape the crucible, pulverise the scrapings in a mortar, and then wash them on a shovel; the prillion of a standard sample will not exceed 2 in 20. The criterion for the lump is its possessing a malleable quality, or bending to the hammer without breaking. Grain tin may be treated in every respect as the above, except in the subsequent addition of culm, which will not be required.

TO DISCOVER THE PROPORTION OF SILVER CONTAINED IN COPPER ORE.—To a sample of one ounce add flux red tartar, 1 ladle; nitre, 1 ditto; lime, 1/2 ditto; borax, 1/2 ditto; fluor spar, 1 ditto; red lead, 1 ditto; mix well with the ore and melt in a wrought-iron crucible (if a stone one only can be obtained, add 1 ounce of iron), about eight minutes in a brisk heat, will be sufficient; for the last five minutes the assay should be incessantly stirred with an iron rod; pour the sample and cool it; break out the lump, and test it in the usual way. [Note.—As soon as the assay begins to flow, the lead, by the power of affinity, will attract, &c. be attracted, by

the silver, and it only requires the process of refining, or burning off the inferior metals, to ascertain the produce.]

We give the two following examples for computing the value of lead and silver ore, and copper ore.—Required: the value of 16 tons, 10 cwt. 2 qrs. of lead and silver ore; the produce for lead being 8½ in 20, and silver 3½ grs. from a four-ounce sample—the price of lead 22½ per ton, and silver 5s. 3d. per oz. Returning charges 6d. 10s. per ton, and lord's dues ½ for lead, and ¼ for silver.—Operation: 16 tons, 10 cwt. 2 qrs. × 8½ = 20 = 7 tons, 2 cwt. 2 qrs.; then, 7 tons, 2 cwt. 2 qrs. at 15l. 10s. (being 22½ less the returning charge)—dues ½, 9l. 3s. 6d. = 100l. 19s. Silver 3½ grs. from 4 oz. sample, gives 72 oz. 6 dwt. 16 grs. per ton; and 7 tons, 2 cwt. 2 qrs. × 72 oz. 6 dwt. 16 grs. = 514 oz.; then, 514 oz. at 5s. 3d.—dues 1s. 8d., 16l. 17s. 4d. = 118l. 1s. 2d., which, added to the value of the lead above, gives a total of 219l. 8s. 2d.

COPPER ORE.—What is the value of 74 tons, 13 cwt. 2 qrs. of copper ore, the produce by assay being 7½, and standard 127l. 12s. 6d. ?—Operation: 127l. 12s. 6d. × 7½ = 9l. 1s. 10d.; then, 9l. 1s. 10d. — 2l. 10s. returning charge × 6l. 11s. 10d.; and as 1 ton = 6l. 11s. 10d.: 74 tons, 13 cwt. 2 qrs. = 492l. 0s. 5d.—the answer required.

The following rule is given for ascertaining the power of steam engines:—1. Square the diameter of the cylinder, multiply the sum by .7854, and this product by 10 (considering the power 15 lbs. to the inch, and allowing one-third for friction)—lastly multiply by 144 (taking the stroke at 8 ft. and 9 strokes per minute), and the last product will show number of lbs. the engine lifts a foot high in a minute. 2. A horse power is estimated at 32,000 lbs. raised 1 foot high per minute, consequently, if the last product be divided by 32,000, the quotient will give the horse-power of the engine.

[To be continued in next week's Mining Journal.]

Transactions of Scientific Bodies.

MEETINGS OF SCIENTIFIC BODIES DURING THE WEEK.

SOCIETY.	PLACE OF MEETING.	DAY.	HOOR.
Entomological	17, Old Bond-street	Monday	8 P.M.
Linnean	Soho-square	Tuesday	8 P.M.
Horological	31, Regent-street	Tuesday	3 P.M.
Civil Engineers	25, Great George-street	Tuesday	8 P.M.
Society of Arts	Adolphus-street	Wednesday	8 P.M.
Zoological	11, Hanover-square	Thursday	3 P.M.
Royal	Somerset House	Thursday	8½ P.M.
Antiquaries	Somerset House	Thursday	3 P.M.
Royal Institution	Albemarle-street	Friday	8½ P.M.
Botanical	20, Bedford-street	Friday	8 P.M.
Royal Asiatic	Regent's-park	Saturday	4 P.M.
Royal Asiatic	14, Grafton-street	Saturday	2 P.M.

GEOLOGICAL SOCIETY.

APRIL 2.—Mr. HORNER (President) in the chair.—A paper was read, by Mr. Anstey, "On an Aerial said to have Fallen near Lymington, Hants."—A paper was also read by Capt. Bayfield, R.N., "On the Junction of the Transition and Primary Rocks of Canada and Labrador."

APRIL 16.—The President in the chair.—A paper was read, by Mr. Macintosh, "On the Supposed Evidence of the Former Existence of Glaciers in North Wales." Mr. Macintosh combated the opinion of Dr. Buckland, as to the origin of scratches and grooves on various rocks, referring these appearances, in many cases, to structural phenomena.

APRIL 30.—Dr. BUCKLAND in the chair.—A paper was read, by Mr. Murchison, "On the Paleozoic Deposits of Scandinavia and the Baltic Provinces of Russia, and their relations to Azov or more ancient crystalline rocks, with an account of some great features of dislocation and metamorphism along their northern frontiers." In this paper, Mr. Murchison gave a general outline of the result of his recent examination of Northern Europe, and the conclusions to which he has arrived, chiefly with reference to the classification of a large tract of country before undescribed on a large and comprehensive scale.

MAY 14.—Mr. HUTTON in the chair.—An extract was first read from a letter, by Dr. A. Gosner, "On the Gypsiferous Red Sandstone of Nova Scotia."—A paper was read, by Mr. Austin, "On the Coal Beds of Lower Normandy." The chief object of the author was to describe the actual geological position of these small basins, and suggest that they might rather be of the Permian than the true Carboniferous period.—Dr. Mantell read a paper, entitled "Notes of a Microscopical Examination of the Chalk and Flint of the South-East of England, with Remarks on the Animalcules of certain Tertiary and Modern Deposits." In this paper, the author offered some remarks—1. On the organic composition of white chalk, and the infusoria contained in that bed. 2. On the organic structure and minute fossil bodies of chalk flints, chiefly with reference to the so-called Xanthidia. 3. On the animalcules of the tertiary strata of England, and the occurrence of living species of infusoria in the British seas identical with the miocene deposits of Virginia. The author concluded by suggesting that a much larger proportion of the sedimentary strata than has been generally supposed may have had an organic origin.—A paper was read, by Mr. Bowerbank, "On some Specimens of Pterodactyl recently found in the Lower Chalk of Kent."

INSTITUTION OF CIVIL ENGINEERS.

MAY 20.—Sir JOHN RENNIE (President) in the chair.—Mr. P. Barlow presented, as an appendix to his paper on the atmospheric system, the results of a series of experiments upon the force employed in drawing carriages up an incline plane of 1 in 43, by a stationary engine and rope traction upon the Canterbury and Whitstable Railway. From these experiments it appeared that the stationary engine of 25-horse power, with a rope, would produce an useful mechanical effect, equal to the engine of 100-horse power on the Dalkey Atmospheric Railway—thus proving by direct facts the deduction of Mr. Stephenson as to the amount of lost power by the latter system. These statements were ordered to be printed with Mr. Barlow's paper. A paper by Mr. Thorold, Mem. Inst. C. E., gave an account of the late failure of the suspension-bridge at Yarmouth. After giving the dimensions of the structure, which appear to have been altered from the original design without the consent or superintendence of the architect, the immediate cause of the failure of the bridge was attributed to the fracture of one of the main links near the point of attachment to the pyramid. On examination, it appeared that the iron was originally of indifferent quality, and that the weld had been made so imperfectly, that only one-twentieth part of the sectional area of the bar had been welded: it was, therefore, evident that these links could never have been properly tested.—An interesting discussion ensued, in which the principles of the construction of suspension-bridges were clearly laid down; and it was insisted upon from the experience of the Menai and Montrose, and other large bridges, that the platforms of such bridges should be rendered perfectly rigid, so as to prevent any undulation, and that the chains should be merely used to support the actual weight of the platform and the road. The novel, but ingenious, plan, for the bridge over the Menai Straits, proposed by Mr. Stephenson to be constructed of a large wrought-iron tube supported by chains, was also mentioned, and the principle appeared to be considered sound.

The next paper was by Mr. Grantham. It gave an interesting account of the wreck of the *Vanguard* iron steam-vessel, which went on shore on a ledge of rocks at the entrance of the Cove of Cork, and after remaining there until the rocks were cut away at low water, so that a high water tide carried her off, was found to be so little injured, that a few days sufficed to repair all damages. The engines were scarcely strained, and nothing was broken. This led to the mention of some very remarkable instances of the power of resistance of iron vessels, and to the experiments now in progress of trial at Woolwich on the powers of iron vessels to resist shot. It appeared that, with a large charge of powder, a hole was merely punched through the plate by the ball; but that with a heavy charge, the ball striking the plate with great velocity rendered it brittle, and the fragments fled about in an extraordinary manner.

Sir John Rennie (President) invited the members to his approaching conversations, and it was announced that the paper to be read at the next meeting of Tuesday, 27th inst., would be "On the Ancient Port of Ostia," by the President.

MAY 27.—The paper read was by the President, giving "An Account of the Ancient Harbour of Ostia." From the concurrent testimonies of the classical writers, Ostia was originally founded about 634, B.C., by Ancus Martius; it was situated at the mouth of the Tiber, about fourteen miles below Rome, and as the supplies for the capital arrived by the river, it was of importance to improve the navigation, and, at the same time, to provide for the shelter of the fleet, which usually lay in the roadstead. Accordingly, the Emperor Claudius determined to construct a new harbour, entirely independent of the river, but, at the same time, having a connection with it. The general plan of this work, as described by Suetonius, and as given in Cassini's great work, *On the Architecture of the Ancients*, is shown to have consisted of an extensive outer harbour, formed by two artificial moles, each projecting about 1900 feet into the sea, enclosing a space of about 130 acres. Between the extremities of the moles, was situated another detached mole, which formed a breakwater, supported a lighthouse, and gave two entrances to the harbour, across which chains could be drawn to form a closed port of refuge. A small inner harbour was also constructed, in which vessels could always remain afloat; this covered about seven acres, and communicated with the Tiber, by means of two parallel canals, furnished with stop gates, in order that the water of the river might be turned through the harbour for securing away the muds, or for other purposes. There is no evidence to show that the pound lock was known or used. The walls of the moles were constructed upon arches, so as to give free access to the current; but, at the same time, they were sufficiently solid to break the sea, and to produce tranquillity within. This was very necessary; for, from the geological condition, and the geographical position of Ostia, the coast was subject to constant advance from the alluvial deposit brought down by the Tiber. By this means a delta has constantly been in progress of formation, and, in the course of 2400 years, the line of shore has advanced about 3 miles 600 yards. All the attempts to improve the entrance of the Tiber, were, by this deposit, rendered completely abortive, as the projecting walls only increased the deposit. Eventually, the ports of Claudius and of Trajan, suffered the same fate—and,

although the works at Ostia were considered by the Romans as their greatest labour, they were of necessity abandoned, and the harbour of Centumcellæ, or Civita Vecchia, was constructed as a substitute. In the works of Ostia there was visible much novelty and ingenuity in design and in construction; indeed, it must be observed, that almost every principle adopted by the improved skill and science of modern times appears to have been there carried into effect, with singular perseverance and ability. By a careful study of the original plans of these ancient works and the results, engineers might read very useful lessons for the treatment of many of the harbours of England, particularly those on the south-eastern coast, where, as at Dover, great difficulties are to be contended with from the motion of the shingle and silt. The position of English harbours differs in some degree from that of Ostia, on account of the former being subject to the action of a great rise of tide and strong littoral currents—while the latter was situated in the Mediterranean, where there is scarcely any rise of tide, and of which the shore currents are sluggish. The deposits of silt would be, in the latter case, very rapid, as the water of the Tiber entering nearly at right angles with the shore would arrest the current, and the whole speedily would become comparatively stagnant.—In the discussion which ensued upon this very interesting paper, the cases of Dover, Rye, Ramsgate, and many other harbours were explained, and the probable result of the present works commented upon.

The following papers were announced to be read at the meeting on Tuesday evening, June 3, when the monthly ballot for members would take place:—"On the Corrosion of Metals," by R. Adie.—"On the Moveable Jib Crane as used at Glasgow," by W. Gale.—"Observations relative to the Moveable Beam Crane," by R. Stevenson, Mem. Inst. C. E.

SOCIETY OF ARTS.

APRIL 23.—W. H. BODKIN, Esq., M.P. (Vice-President), in the chair. Mr. C. Varley described a portable electrical machine, invented by his son, which consists of a glass tube, 20½ inches in length, fixed in a wooden handle, and of a second glass tube, to hold a charge (as a Leyden jar), having an inner coating of tinfoil; a slip of tinfoil connects the inner coating of the smaller tube with a brass ring, fixed at its lower end, which ring is used for the purpose of discharging the jar; a brass tube serves for the external coating, to which is attached a box, containing the rubber; the inner coating of the tube is insulated from the outer by the inclined part of the glass on the inside, and by the uncoated portion on the outside. The long tube is passed through the rubber and the shorter tube, which, being moved backward and forward through the cushion, causes the outer tube to become charged.

Mr. W. J. Hay's improved fighting lantern, as used in her Majesty's navy was next brought forward. It is intended to supersede the ordinary horn lantern, lighted by a "purser's dip," which affords but little light, and, in cases of night engagements, when required to be darkened, is placed in a bucket, which is found to be much in the way of the men working the guns. Mr. Hay's lantern is constructed of copper, and is furnished with a wax-candle, which will burn for about six hours, being pressed up by a spring, similar to those used in carriage lamps. Air is supplied by means of small perforations on the top and bottom of the lanterns, which preclude the possibility of the concussion of the gun forming a vortex, as in ordinary cases, and thereby extinguishing the light. A slide, of telescopic construction, is used for darkening the lantern, when required.

Mr. W. V. Pickett read a detailed paper, "On his Proposition for Constructing Houses entirely of Metal, whereby natural forms may be introduced to a greater extent, than by the present systems of architecture." The author proposes to construct the walls of cast-iron plates, leaving a space between such plates, and connecting them together by bolts and rivets, the ends of which project, both within and without the walls, are to be ornamented with metallic scrolls, &c. In order to protect the metals from corrosion, a coating of carbonate of barytes is to be applied, or the metals coated with zinc, &c., by the electro process. Among the advantages to be derived from Mr. Pickett's plan of metallic building, may be mentioned durability, safety from fire, the absence of damp walls, the comparatively short time in which buildings may be erected, and the possibility of constructing buildings to a very great extent, for exportation. The subject was illustrated by some beautifully-finished models.

APRIL 30.—Sir L. L. GOLDEN, Bart. (Vice-President), in the chair. Mr. D. Davies's improved railway break was the first subject brought before the meeting, and which was fully described in last week's Journal.

A drain tile, submitted to the society by Mr. W. Moffat, was next described. The transverse section of this tile is nearly in the form of the letter H; the lower half being left open, forms a channel for the water, while the upper half, whose sides are perforated, is filled with broken stone or burnt clay. The length of the tile is fourteen inches, and the depth eight and a half inches, the water channel being three inches square.

The secretary read a paper by Mrs. T. Allom, "On the Introduction of Bees to New Zealand."—The attention of the author of this paper was first drawn to the subject by hearing from her son (who was on the New Zealand Company's surveying staff) of the high price of butter in that colony, for which article she conceived honey would form an excellent substitute. The danger of the bees being neglected on the voyage was urged by many of her friends as a reason why she should abandon her project. The opposition, however, with which she met, rendered this lady more determined to endeavour to carry out a plan which appeared to her calculated to be of great service to the settlers. Accordingly, she set to work to contrive a method of safely transporting her "tiny colony" to New Zealand. The contrivance is as follows:—a large oblong box of wood having its top, and also front, of perforated zinc, containing in the centre a common straw hive, which answers as the pavilion, and has an entrance in front; on either side is a wooden breeding box communicating with the pavilion. On the top of the case is a circular zinc feeding trough, furnished with a cylindrical passage from the interior of the case, through which the bees pass to a perforated zinc floating stage above the hive, on which they rest; while feeding, the feeding trough is filled with liquid honey through a funnel-shaped opening in the side; a glass top enables the apiarist to inspect the insect while feeding. During the voyage the bees were taken care of by the Rev. Mr. Saxton and his family. After passing the Bay of Biscay, the bees were fed twice a week with two-thirds of honey and one-third of water. The whole arrived safely in the colony, and wax, the first produce of bees, in New Zealand has been presented by Mrs. Allom to the society.

Mr. Rotch (vice-president) described his collateral box hive, the principal object of which is to secure the apiarist from the attacks of the bee. In general form this hive is similar to that of Mr. Nutt, but by the introduction of perforated zinc slides between the pavilion and the side compartments, the manager is enabled to remove the collateral box without the bees escaping, and the ventilation is rendered complete; moreover, every part of the hive may be inspected through glass windows, which are covered (when required) by hanging shutters. For the purpose of fumigation, without displacing any of the compartments, a gauze bag is suspended under each, the bottom of which is formed of perforated zinc.

MAY 7.—G. MOORE, Esq. (Vice-President), in the chair. Mr. J. Scott Russell described an upright drill, the invention of Mr. J. McDowall, the novelty and advantage of which consist in the application of the power employed—being in the direction of the axis of the drill, instead of at right angles, as in the ordinary drill.

Mr. Boulter described his improved compensation pendulum spring, whereby he is enabled to regulate the pendulum without altering the adjustment, and vice versa; the pendulum is attached to a rod (of white deal), by means of a pivot passing through two small steel plates let into the rod.

The Secretary read a paper, by Mr. Dicksee, "On the Manufacture of his Pressed Glass Mosaics, applicable alike for Pavements, Mural Decorations, and Furniture," several specimens of which were laid on the table. The mosaics may be produced of any colour. They may also be moulded into any required shape while the glass is in a fused state, by means of a double action screw press. In order to prevent the surface of the mosaics being blunted and uneven, it is necessary that the pressure should be continued on a sufficient time, in order that the glass may harden, before being removed from the mould.

Dr. Jarvis, of Connecticut, U.S., explained to the meeting his "Surgical Adjuster," the objects of which are to reduce dislocations, to adjust all fractures, and preserve the fractured extremities in opposition during the process of re-union. This instrument affords the surgeon the power of twelve men, and is as perfectly at his command in performing any surgical operation, for which it is intended, as are the movements of his own limbs; moreover, he can apply any amount of power that may be desirable, either rapidly or slowly, or relax instantly or gradually, as may be desirable. He can also perform his own extension and counter-extension on the limb, which he reduces or adjusts without the aid of an assistant—while, at the same time, he is enabled to feel the amount of power he is applying to the injured limb.

The above are a few of the advantages of this important machine, which consists of a brass or other metal case 13½ inches long, and 1½ inch by half a inch square; the cavity within is divided by a partition running lengthwise nearly in the middle, thus forming two ways—the one square, into which a rack is to be received—the other, round, in which is a female screw, and into which the male screw of the former fork works; near the other end of the case, and on its outer surface is a ratchet wheel, the cogs of the pinion wheel matching the cogs of the rack; the shaft of the two wheels terminates in a square hub, to be received into a corresponding square sinking at one end of the lever by which the motive power is effected for making extension and counter-extension; forks of particular forms, to suit different parts of the body, and having threaded shafts, are fixed into the round cavity of the case; padded rolls of soft material, belts, straps, and a double inclined plane, complete the contrivance.—Mr. Brassey Cooper and other surgeons of eminence bore their testimony to the value of Dr. Jarvis's humane instrument, by which so much suffering is avoided.

A new Belgian railway company is about being formed in Belgium, for the construction of a railway for connecting the quarries of Soignies with the national line. This measure will be of great importance in promoting the prosperity of that district, and, as the line will not exceed ten kilometres, the Government have the power of constructing it, without applying to the Legislature, and, if diligence be observed, it could be completed and opened by the winter.

METALLIC RESOURCES & THE IRON TRADE OF AMERICA.

As much has been written on the subject, and a considerable deal of apprehension expressed, that America will become a most successful rival to us, in the supply of hardware manufacture to all parts of the world, a variety of statistical detail, published in *Hunt's Merchants' Magazine*, a New York periodical, will, at this time, be found highly interesting. The writer commences with the year 1812, when the war with England gave so great a stimulus to manufactures in America, as, in a great measure, led to the knowledge and development of the vast metallic resources of that country; mechanics were liberally paid and encouraged, taught the knowledge of machinery, and, in the State of Pennsylvania, were admitted freeholders the day on which they arrived; heavy duties were laid on the foreign article, while the implements, tools, and furniture of mechanics were admitted free of duty. The States of Pennsylvania, Western Virginia, Maryland, and New Jersey, are the principal iron districts, abounding with coal of excellent quality, and abundance of water power. Immense stores of other metalliferous wealth exist also in Missouri, Ohio, Kentucky, and the Western States, and which, being adjacent to the most fertile agricultural districts, will prove of immense importance; the United States contain 80,000 square miles of coal, being sixteen times the extent of the coal measures of Europe. Of fifty-four counties in Pennsylvania, thirty have coal and iron in them; the whole state contains 46,000 square miles, of which 10,000 miles are coal and iron measures. Great Britain and Ireland jointly contain only 2000 miles, so that this state alone has five times the extent of these wealth-producing strata as Britain; they are equally rich, and have the great advantage generally of being worked above a water level, while the mines of England are sometimes carried to a depth of 1000 feet or more. In 1820 the quantity of anthracite raised, and sent to different markets, was 365 tons, which gradually increased, until, last year the consumption was 1,631,670 tons; and yet America imported in that year 40,000,000 dollars worth of iron and steel. The advantage is still with England; her coals are near the coast, while those of Pennsylvania are from 100 to 200 miles inland; what in the former place cost a dollar and a quarter per ton, by the time it reaches the works in the latter is increased to eight or nine dollars; she has also the priority of improvement in manufactures, a concentration of immense capital, the cheapness of labour, and economy of fuel; from these causes the furnaces of England average 3500 tons of iron per annum, while, in America, they do not exceed 1000. There are now producing in the state of New York 13,000 tons of bar-iron per annum; near Baltimore twenty furnaces are giving 20,000 tons; and the iron trade has lately received such an impulse that furnaces are springing up in every direction, and those out of blast again resuming their activity. The whole product of the United States, as near as can be estimated, is 540 blast-furnaces, yielding 486,000 tons of pig-iron; 954 bloomeries, forging, rolling and splitting mills, producing 291,600 tons of bar, hoop, sheet, boiler, and other wrought-iron; 30,000 tons blooms, and 121,500 tons of castings, amounting in value to \$42,000,000. The present price of American bars is from \$75 to \$80 per ton, while they can be delivered from the works at a cost of \$57½; thus proving the iron trade to be at the present moment highly remunerative and tempting to the capitalist. In Missouri, the iron ore is so pure as not to require roasting; and one mountain in that state, 350 feet high, and two miles in circuit, consists of specular iron, yielding 70 per cent. of pure metal; wood for charcoal exists in teeming abundance, and a vast metallic region remains yet undeveloped, for want of facilities of transport. Pennsylvania at present seems to be the great mart for iron; it is calculated that its produce of iron, and iron manufactures, amounts to \$21,000,000; and that there is consumed in this production 188,000 tons of its own anthracite, employing 20,000 workmen, and rendering 120,000 persons dependant on the several divisions of the iron trade.

Thus far it is shown that the metallic resources of America are enormous; but, however extensive, there is not yet sufficient population and concentration of capital to take advantage of their existence to the extent the writer would suggest; very many years, we think, must pass before England need fear competition from that quarter, and indeed it is a question (very much in favour of our own country) whether—taking the geographical position and extent of surface, geological development, and other circumstances pertaining to both—America can ever become a large exporting country in metals, her own increasing requirements demanding so large a share of those productions, which, though so widely extended, must take centuries to become available in the view many have taken of the subject.

IN RE PINKUS, IN RE PROSSER.

TO THE EDITOR OF THE MINING JOURNAL.

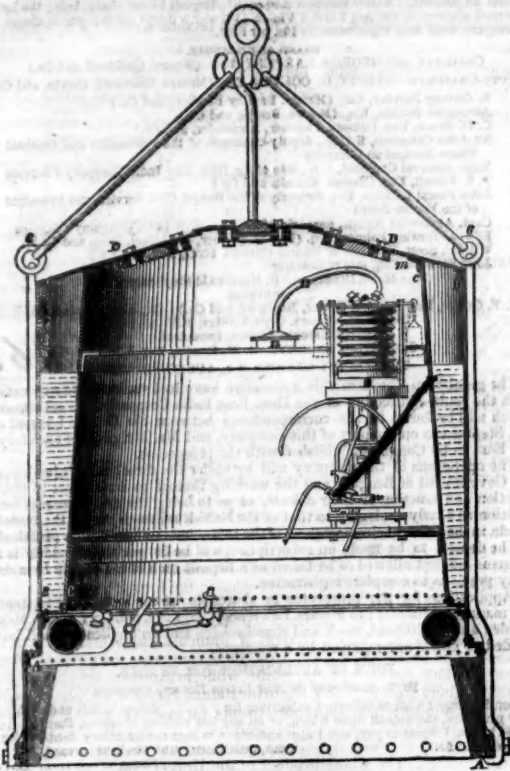
SIR.—In the *Times* report of the proceedings in this case yesterday before the Lord Chancellor, his lordship is reported to have intimated his opinion of the construction of the Solicitor-General's report to be correct; "for it appeared that, in consequence of a conversation, he (Mr. Pinkus) had stolen that part of his invention which he was obliged to waive." Now, it was sworn by the affidavit of Mr. Prince, of Lincoln's Inn-fields, as well as of Mr. Pinkus, that so far from Mr. Pinkus being obliged to omit any part of his invention, he, with a view to avoid vexatious opposition to his own patent, voluntarily withdrew a part of his invention, which was supposed to interfere with the alleged invention of Prosser and Carcano; but he did not waive or abandon it, but persevered, as he still does, in having a patent for the same, and which will, in all probability, bring the matter again before the court. Mr. Prince, through whose agency and in whose presence the alleged conversation took place, states, in his affidavit, that the account given of the pretended confidential communication is greatly exaggerated—and, in fact, untrue. Mr. Pinkus, moreover, swears that every part making up the drawing, which he voluntarily omitted, and upon which he opposed the parties in the progress of his patent, is, in fact, included in his patents of former years. The drawing, which Mr. Pinkus so omitted, is nothing more than the cross section of an atmospheric pipe having a trough, slit, and valve. The parties state that their invention had reference to compressed air, whilst the answer to it is, that Mr. Pinkus, in one of his former patents, sealed several years ago, expressly shows the use of compressed air. The specifications and drawings of Mr. Pinkus's former patents were omitted to be made exhibits, and, consequently, could not be used in court; but an inspection of them would at once have proved whether it were possible for Mr. Pinkus to have got any part of his invention from Prosser and Carcano. In the course of a few days, Prosser and Carcano will be obliged to record their alleged invention, and Mr. Pinkus will then be enabled to publish with safety the drawing which he has omitted, but claims to be included in his former patents, and the public will then be enabled to judge whether the invention is not his own by reason of those former patents, and now only sought to be used by him in combination with his further improvements, which are not the subject of opposition. If the invention patented by Prosser and Carcano, should be of the nature of the drawing so omitted by Mr. Pinkus (and which is but a small part of his combinations), he will then lose no time in making out a writ of *scire facias* to repeal their patent altogether. To those to whom Mr. Pinkus is personally known, this explanation is unnecessary, whilst public opinion it is hoped will be suspended till publication of the respective plans.

I am, Sir, your obedient servant,
LEWIS ROBERT BELLAMY, Solicitor for Mr. Pinkus.
4, South-square, Gray's Inn, May 24.

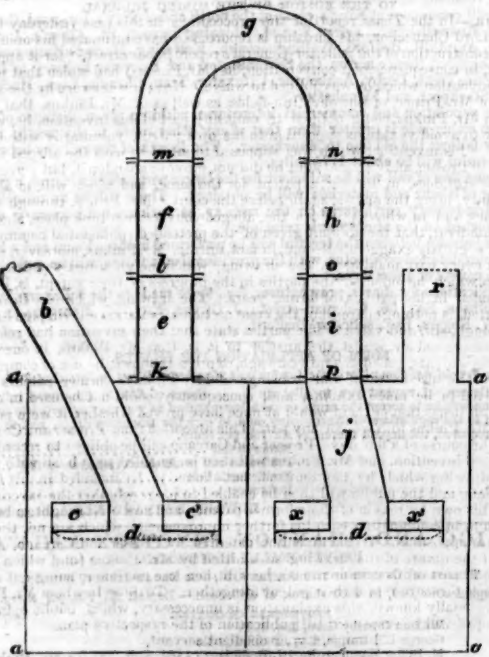
ARTIFICIAL STONE.—A Mr. Ramsome (of Ipswich), after much patient research, has succeeded in maturing a plan for rendering stones, whether consisting of allex, granite, limestone, or marble, perfectly soft and malleable, and which may, after being cast in moulds, be again rendered hard by the action of fire; and more durable than in their original state, by which process the most elaborate and beautiful designs are produced, equal in appearance to the works of the sculptor, and at a price which will render them easily attainable; it will stand all changes of atmosphere, and is exceedingly durable. Information has also reached us from a correspondent in the United States, that an ingenious mason, named Hill (of Plainville), has succeeded in producing a composition which is equal in appearance and durability to stone itself. Having had presented to him several specimens of the materials of the edifices at Yucatan, which have stood its humid climate for unknown centuries, and which were supposed to be stone, he analysed the substance, and has succeeded in perfecting a similar composition, which becomes excessively hard and durable, and superior to the best natural stone. With the same material he forms a wall for external walls, which is impervious to water, and protects materials with which it is covered from the action of fire, and for which he has been offered a large sum as purchase money; he can manufacture columns, pillars, &c., of this material, which, it is expected, will prove of important use in building. Galvanism is employed in the production of the composition.

THE PORTSMOUTH FURNACE.—This furnace, lately repaired by Dr. G. Palmer, was put in blast on the 23d instant: in six hours, slag, or cinder, was running, and on the following day the furnace was tapped, and yielded over two tons of good grey iron. The founder (Mr. T. Davis), who served an apprenticeship in Wales, says that in his experience he never met with a smaller instance; and we heard it remarked by many gentlemen entirely familiar with the business, that they never heard of a furnace running slag in six hours, and yielding grey iron of equal excellence in the short space of twenty-four hours from the time of "blowing in." This furnace runs entirely upon Coal Region ore, and is nine feet across the boshes, thirty-four feet high, five feet across the tassel head, and employs an engine of 60-horse power; it continues to run remarkably well.—*Miner's Journal.*

DR. PAYERNE'S METHOD FOR PURIFYING AIR.



We have so frequently adverted to the system proposed by Dr. Payerne for this invaluable object, and described the process by which he and Mr. W. B. Vigers, who patented the invention in this country, propose to carry out their improvements, that we gladly lay before our readers the following concise description of a material alteration from the original specification, by which Dr. Payerne anticipates increased advantages in his project for purifying air and supporting respiration. The means adopted in the previous method for the purification of vitiated atmospheres were, as our readers will remember, of a chemical character, by the employment of such vehicles as peroxide of potassium, thrown from time to time into water, when the extra portion of oxygen, becoming disengaged, would replenish those places deficient in that element; or by the subjection of chlorate of potash and peroxide of manganese to heat, when a similar result could be obtained; while, for bringing into contact with the absorbent and purifying mixtures the vitiated air, proportions of potash, quicklime, and water, acted on by a sufficient current of air, were employed: the water being a medium for bringing the potash and lime into a state of intimate admixture, so that the latter might absorb the carbonic acid of the former, and render it caustic, and the mixture of caustic potash, lime, and water, would have a strong tendency to absorb carbonic acid from the air with which it is brought into contact. Thus, with the exception of the mechanical contrivances to connect or adjust these operations, the process was essentially chemical; but Dr. Payerne has now devised a method, by the employment of filters, or sieves, by passing through which the air will be more effectually purified. This process, which at present is employed in most of the hospitals of Paris, can, with considerable efficiency, be applied to ventilating collieries, destroying the carburetted hydrogen, and thus removing the great source of danger always existing in those workings. Annexed is a sectional elevation of the apparatus employed, which may be explained as follows:—



a, is a box, divided into two compartments, filled with water to the extent shown—in the water the chemical re-agents destined to purify the air being either dissolved or mechanically suspended; *b*, a pipe for the passage of the air of the purifying bellows; *c*, the float of the first compartment, and *x*, the float of the second compartment; *d*, the grating of the first, *z*, of the second compartment; *e*, *f*, *g*, *h*, *i*, *j*, different pieces of the same pipe *g*, which has two legs, one about twice the diameter of the other: the larger fits closely upon, and covers an orifice in, the top of the chamber of the box *a*, and the smaller one is inserted through a like orifice in the top of the smaller compartment, and is prolonged till it terminates in the second float *x*. The pieces of the pipe *g* are flanged; and firmly secured together by bolts and nuts, the pieces *k* and *p*, which abut immediately on the top of the box, being secured to it in like manner. At the bottom of the larger leg, as also at the joinings, *t* and *v*, there are inserted the gratings, or sieves, of copper or iron wire-cloth, *d* and *z*, rendered, by galvanization or otherwise, as little liable as possible to oxidation; and each of these gratings, or sieves, is covered to the depth of an inch or two with moss, interspersed with small pieces of quicklime, or any other substance which is of a like absorbent quality, and not of a nature to generate of itself any gases of a noxious character. At the joinings, *p*, *o*, *n*, there are inserted gratings of fine platinum wire-cloth, each of which is covered with spongy platinum.

The vitiated air entering by the pipe *b*, into the float of the large chamber of the box *a*, and thence into and through the water therein, is purified by the chemical re-agents dissolved or suspended in the water. It then rises into the upper or vacant parts of that chamber, and thence into the pipe, *g*, and through the various metallic gratings and layers of moss, quicklime, and spongy platinum, being thus deacidated and still more completely purified; the moss and lime serving to absorb any excess of humidity, and the platinum resolving into water and hydrogen, which may come over into the smaller leg of the pipe *g*. On escaping from this, the air undergoes another, and final purification, by being passed through the water in the smaller chamber of the box, containing, like the other, chemical re-agents, and rising from this water, the air is carried off in a state fit for respiration through the pipe, *r*. There are also doors to admit the

water and chemical substances into the chamber, and cocks, by which they may be withdrawn. With respect to the re-oxygenating exhausted atmosphere, Dr. Payerne now considers peroxide of potassium preferable to all other substances, previously recommended, and both of these improvements he embodies in his principle for diving bells, as shown in the following diagram: by this it will be seen that the bell is fitted with cocks for the admission and escape of air into the inner department, and with a reservoir for the supply of compressed oxygen gas, and also with an apparatus for freeing the air by absorption, as in the mode above described, or any other deleterious matter. Some short time since, Dr. Payerne descended in a diving bell, at the quay of Orsay, in presence of M. M. Mallet and Erissau, divisional inspectors, delegated, in connection with him, by the Minister of Public Works, to assist in experiments for the purification of air by a new process, when the following observations were made:—At 8 h. 0 m.—water below the mark, 0.76; pulsations, per minute, 84; manometer, about one-ninth of the atmosphere; thermometer, 18 deg. At 8 h. 12 m.—the water below the mark, 0.71. Whilst descending there was merely felt a slight sensation about the eyes, which speedily ceased when the bell had reached the bottom. At 8 h. 12 m. some of the compressed air was let off, this immediately obtained an agreeable cool atmosphere. With closed cock, at 8 h. 14 m.—water, 0.80; pulsations, 81. 8 h. 32 m.—water, 0.71; thermometer, 22 deg.; manometer, 9; pulsations, 81. 8 h. 47 m.—water, 0.64; thermometer, 23 deg.; manometer, 9; pulsation, 81. No uneasiness whatever was experienced, the experimentalists merely feeling a little heated. A powerful ventilator in the square part of the bell caused a continual humming. 9 h. 0 m.—water, 0.61; thermometer, 24 deg.; manometer, 6; pulsations, 80. At 9 h. 3 m., the cock of the compressed air was opened, and the air found cool, with an agreeable breeze. At 9 h. 9 m. the water being at 0.69, no more compressed air was left. At 9 h. 17 m.—water, 0.62; thermometer, 25 deg.; manometer, 6; pulsations, 82. At 9 h. 39 m.—water, 59; thermometer, 25 deg.; manometer, 6; pulsations, 82. At 9 h. 49 m.—water, 0.59; thermometer, 25 deg.; manometer, 6; pulsations, 82. Similar experiments were continued till 11 o'clock, when the last observations gave—water, 0.57; thermometer, 25; manometer, 6; pulsations, 86. These results are considered highly satisfactory, and confirmatory of the applicability of the process.

We now understand, that this valuable discovery is to be carried out in London by Mr. John Marshall.

WATER IN THE SPHEROIDAL STATE.

SIR,—I have just had my attention directed to a letter from one of your correspondents (also in the *Mining Journal* of the 19th April) relative to the spheroidal form of water. Your correspondent first inquires, "whether it is established by experiment that the gradual diminution in bulk of the spheroid is caused by evaporation?" and then goes on to describe an hypothesis of his own, by which he endeavours to account for the remarkably low temperature of the spheroid, on the assumption that the water does not pass off in the form of steam, but is, on the contrary, decomposed into its component elements, oxygen and hydrogen. This hypothesis, however ingenious it may appear, will not, I fear, be found to stand the test of experiments. When water is thrown upon the surface of any solid body, heated to a temperature higher than 400 deg., it assumes the peculiar condition which I have called *spheroidal*, whatever the substance on which it is thrown may be. In the experiments which I have shown in public, I have used vessels of platinum; but the phenomenon would be the same if I had employed instead, silver, porcelain, marble, or, indeed, any solid body, which was capable of resisting the necessary temperature. Now, as neither platinum nor any of the above substances has the power of decomposing water or steam at a red heat, it is clear that your correspondent's views are here incorrect. I would also remind him, that if the decomposition of the water were effected by the action of the metal (supposing one of the more oxidisable metals to be used), it would not be accompanied, as he appears to suppose, by the radiation of oxygen gas "from every point of the lower hemisphere of the spheroid," but would take place at the surface of the metal, which would exercise its affinity upon those particles of water (or rather steam) which are more immediately in contact with it, since we know that chemical action takes place only between molecules which are at inappreciable distances from each other. Again, your correspondent assumes, that the oxygen, radiating from the lower half of the spheroid, meets and combines with the radiant heat emanating from the heated vessel; and, finally, that the compound of oxygen and carbonic steam, formed, infringes on the surface of the metal, and is reflected from it at certain angles. On this it is only necessary to remark, that if the metal possessed the hitherto unexampled amount of chemical attraction for the oxygen, to enable it to draw down that element from the distant spheroid of water, which is a thing impossible, surely it would not allow it to escape from its embraces when it subsequently had it in immediate contact; and, consequently, instead of the oxygen gas being reflected upwards, and brought into collision with the escaping hydrogen, it would remain combined with the metal.

An experiment, showing that chemical action does not take place between a liquid and a solid naturally prone to combine, when the former is in the spheroidal state, may be made by throwing a few drops of nitric acid into a vessel of silver, sufficiently hot to induce the spheroidal state. The acid will be seen gradually to disappear; but, on examining the surface of the silver after the experiment, no sign of chemical action having taken place will be apparent. The same thing may be shown by forming a spheroid of dilute sulphuric acid on a surface of iron or zinc; the metal invariably remains uncorroded by the acid, clearly showing that the phenomenon is unattended by chemical decomposition arising from the affinity of the metal for any of the constituents of the liquid. But an experiment which bears, perhaps, still more directly on the question at issue, is this:—Let a spheroid, composed of a known weight of water, be formed in a capsule of platinum heated by being placed in the cavity of a red-hot brick. If a cold glass funnel or a common tumbler be held over the capsule, it will be found that the watery vapour derived from the spheroid will condense on the sides of the cold glass; and, by weighing the latter before and after the experiment, it will be found that the same quantity of water has been condensed as was used to form the spheroid—or, in other words, that "the gradual diminution in bulk of the spheroid is caused by evaporation," and not by decomposition.

In conclusion (as I fear I have already trespassed too much upon your valuable space), I may say, that should your correspondent still feel interested in this curious subject, it will give me much pleasure to communicate with him, either personally or by letter.

J. E. BOWMAN.

Victoria Park, April 17.

EMBANKMENTS ON RAILROADS.

TO THE EDITOR OF THE TIMES.

SIR,—I notice in your newspaper of the 26th ult. a paragraph headed "Fall of an Embankment," alluding to the slip which has lately taken place in the "New Cut" at North Shields. Many years ago, I proposed to prevent the embankments on railways from giving way, by studding them with cuttings of the *Balanus Poplar*, which would not only penetrate to a proper depth, but form a dense compact mass by their intertwining roots, and thus form a complete counterpart to the early and latter rains. It is obvious a surface of grass cannot fulfil the purpose—*occidit quod non servat*.
Hull, May 4.

BLACK-LEAD PENCIL MANUFACTURE.—As the details connected with this important branch of our fabrics must be of considerable interest from its association with the arts and the most beautiful elements of our national superiority, we give the annexed description of the method pursued in the manufacture of lead pencils. Wood and lead form, of course, the raw material of this art; the former, consisting of cedar imported from Mexico, and the latter of wood, dug from the recesses of a mountain, which, in this respect, is unrivalled by any other in the world. To commence, the American logs are cut into planks, and again into suitable lengths, both operations being performed by a circular saw. The lengths are then taken to another circular instrument, to prepare them for the grooving engine, where two saws are at work—the one operating horizontally in forming the groove, the other regulating as to depth and size. Close to the grooving engine a separate instrument is kept constantly at work in cutting covers, which are rapidly attached or fitted after the lead has been inclosed. This process above all others, requires the nicest skill, so that the joinings may be workmanlike, and all waste of so valuable an ore avoided. The gluing is a simple operation, and, when sufficiently dried, the pencils are taken to the rounding engine, and from it to a planer of peculiar construction. They are then polished by females, who perform this part of the operation by simply rubbing with the skin of the dog-fish. Cutting into proper lengths follows, and the smoothing of the ends effected by a common razor. The pencils are then taken to the stamping machine, where a boy feeds an ingenious little mill at the rate of one hundred or more per minute. In preparing the lead for the self-pointed pencils, a steel circular plate, divided into halves of a given diameter, is put into a steel tube containing a composition, which after a time becomes fused, presenting when in that state the appearance of putty. Into this substance a steel rod of the diameter of a tube is pushed by a half turn of a screw, and in this way two strings, or threads, of the metal are forced out, broken off, and then cut into the required lengths. The extent of the manufacture may be inferred from the fact of 2000 cubic feet of cedar being annually consumed upon it.

STEAM-BOILER EXPLOSIONS—PRESSURE AND RENDING FORCE.

The following highly valuable consideration of the above subject has been communicated to us by a talented correspondent, and, as a practical explanation of no ordinary interest or utility, we would solicit the attention of all classes of our readers. Our correspondent first observes that, in order to a clear understanding of this subject, it is needful to keep distinct the two ways in which the elastic force of the steam affects the boiler. The one most obvious, though of the least consequence, is that which is understood by the word "pressure"—viz., the elastic force of the steam resisted, at all points, at right angles to the surface of the boiler, tending to thrust it out; the other is that aptly denominated the "rending force," and acts in the direction of the surface of the boiler tending to tear it asunder. That the "pressure" simply has but little power to burst the boiler, may be shown by drilling a hole, of an inch area, nearly through the plate of a boiler, containing steam at a pressure of 50 lbs., leaving only a thickness of iron of an eighth of an inch; the pressure will not be sufficient to thrust out the remaining portion—no, nor five times the pressure—therefore, "pressure" alone considered, a one-eighth inch plate would be amply sufficient to bear 50 lbs. to the inch. But, now, we come to the consideration of the "rending force." Let us suppose a cylinder (of any length) with flat ends, three feet diameter, made of one-half inch plate; this, filled with steam at 50 lbs.—then the area equals 1018 in. x 50 lbs. = 50,900 lbs.—57 in. sectional area of the iron in any plane parallel with the ends = 893 lbs., the rending force on every square inch of the section. Let hemispherical ends be substituted for the flat ones, it is well known that the force will be the same; then shorten this cylinder till it becomes a sphere; this being an equal figure, the rending force will be 893 lbs. per square inch in any plane of section passing through the centre. Now, let us double the diameter of the cylinder—then the area equals 4072 in. x 50 lbs. = 203,600 lbs., or four times the strain on the three feet boiler, but being distributed over 114 inches sectional area of the iron, the rending force will be only 1786 lbs., or double that of the other. This refers to the longitudinal rending force in a boiler; to arrive at a similar conclusion, as it regards the transverse force, we will suppose a rectangular vessel (of any length) three feet square, made of one-half inch plate, containing steam at 50 lbs.—then the area equals 1296 in. x 50 lbs. = 64,800 lbs.—72.5 in. sectional area of iron = 893 lbs. per square inch. Substitute semicircular ends, the force is clearly the same; let the vessel be shortened till the diameters of the ends coincide, it will then be part of a cylindrical boiler, and the rending force is 893 lbs. in any plane of section passing through the axis of the cylinder. From this it appears that in a cylindrical boiler with hemispherical ends, the rending force is equal in every part, and the advantage it has over a sphere is, that it may be extended to any length, thereby increasing its capacity, without disturbing this equality, or increasing the rending force. Also, that in a boiler of any other form besides these two, the rending force is not equal. The main difference between the pressure and the rending force, seems to be, that of the former force, each part of the boiler takes its own share, and that only; while, with the latter, every part of the boiler bears the whole of the force, in the same way as every link of a chain bears the whole suspended weight. It might be also easily proved that, in any vessel, the rending force, in a given plane, is equal to the sectional area multiplied by the pressure.

METALS AND METALLIC PROPERTIES.—On Saturday week Professor Faraday continued his series of lectures at the Royal Institution, Albemarle-street, on the subject of metals and metallic properties, by the consideration of mercury. He commenced, by explaining the process of silvering glass for mirrors, and illustrated it by practical experiments. The glass being overlaid with a slight coat of varnish, the mercury is copiously poured upon it, till the whole surface is completely covered, when every impurity is carefully removed from its surface, and a sheet of tin-foil being placed on this, and a considerable weight evenly applied over the entire plate, the mercury oozes out into a trough beneath, and at the termination of a few days the weights are removed; the mercury has become attached to the glass, and remains perfectly hardened. The extreme susceptibility of mercury, both to freeze and melt, was beautifully proved by practical experiments; its latter peculiarity was illustrated by a table, drawn up by the late Professor Daniel, in which, while no number could be positively fixed to illustrate the fusing point of either platinum or iron, in consequence of their extreme difficulty to be melted; gold was named, at above 400, and mercury at 29. By placing an admixture of ether and carbonic gas into a proper receptacle, mercury became also easily frozen; by these means the lecturer took a cast of a medal, by pouring on it at first the metal in its usual liquid state, and then applying the refrigerating carbonic acid and ether, when, after a short interval, the metal became solid, and a perfect cast was obtained.

Professor Faraday, on Saturday last, entered on the consideration of zinc. He commenced, by proving that this metal when melted and poured into a mould, and then allowed to become solid, is extremely brittle and susceptible of breakage by a small hammer—on the other hand, if, when melted, it is poured into water, it becomes soft and very malleable, capable of being rolled out to almost any thickness, and from its ductility can be drawn out into the finest wire, possessing, at the same time, extreme tenacity and tension. When mixed with chloride of potash (which contains a very large quantity of oxygen gas), and subsequently ignited, it will burn with a bright and brilliant flame; a beautiful experiment illustrated at once this fact, and the volatility of the metal. The learned professor exhibited and explained the construction of the voltaic battery, consisting of square flat plates of zinc and platinum, joined together, and thus forming a plate of zinc on one side, and of platinum on the other. Layers of flannel, steeped in dilute sulphuric acid, of the same size exactly as the plates, are placed in rows alternating with them, till they are ten in number. An improved voltaic battery was exhibited by the lecturer, which having only twenty plates, was fully equal to the old batteries of 200 plates, and produced a light equal in intensity with that of the sun, and the flame (if the battery could have been constructed of sufficient size) would, in every respect, either of heat, size, shape, or density, accurately assimilate with the sun. In conclusion, the effects of the voltaic fluid in a chemical point of view, were beautifully illustrated, by taking three vessels, filled to the brim with blue water, and connected together by a thread of cotton; a piece of platinum being put into the extreme vessels, and the central remaining as before. The wires of the battery were then brought into contact with the platinum, and the water of one became red, and the other green, the one uninfluenced by the current retaining its original colour, blue.

APPLICATION OF ELECTRICITY IN THE MANUFACTURE OF METALS.

At the Society of Arts, on the 14th inst., Mr. Whishaw (secretary) read a paper by Mr. Napier, "On Separating Metals from their Ores by Means of Electricity." After giving an account of the progress made in the application of electricity for the purpose of manufacturing metals from their ores since the year 1839, the paper describes the author's method of operating, for which purpose he uses a black-lead crucible, lined inside, within an inch or two of the bottom, with a coating of fire-clay, which is allowed to dry, and a second and third coat superadded; the ore to be operated on (which, if a sulphate, should be previously roasted) is put into the crucible, together with a little lime or other flux for the purpose of giving it fluidity. The crucible, with its contents, is then placed in a common crucible furnace; a battery of zinc and copper is prepared, with five pair of plates, excited by very dilute sulphuric acid; to the zinc of this battery is attached an iron rod, the end of which is inserted in the furnace, and caused to touch the outside of the crucible; another rod, either of iron or copper, is used, having at one extremity a disc of iron or coke, which is made to rest on the surface of the fused mass in the crucible—thus, the electricity passes down through the whole fluid mass in the crucible, and in the course of an hour the metal is separated from the ore, and deposited at the bottom.

ZINC THREAD.—The *Moniteur Industriel* announces that an important discovery in the manufacture of zinc thread has been effected by M. Boucher, who, after many essays, has at length been able to produce zinc threads of any diameter, of great suppleness, and presenting all the qualities of an excellent metal thread. In all cases where a great tension is not required, this thread can be substituted with advantage for that of iron, brass, or copper. Its applications at present are very important, and increase daily. It is used for culinary purposes; there are metallic threads, threads for plants, clasps, points for soft wood, cords for bleaching yards, &c. The price of zinc has doubled during the last few years, but, notwithstanding, M. Boucher vends his thread at a lower price than the galvanic iron thread, and considerably less than brass thread. There can be no doubt that this is an important invention, and we are satisfied that a large demand will shortly eat its merits.

THE ELECTRIC TELEGRAPH.—COOKE AND WHEATSTONE PATENT.

The ELECTRIC TELEGRAPH has been adopted on the following LINES:—
By ORDER OF THE LORDS OF THE ADMIRALTY, on the South-Western Railway, a GOVERNMENT TELEGRAPH from the ADMIRALTY, Whitehall, to PORTSMOUTH, a distance of NINETEEN MILES.

On the same line, a Commercial Telegraph from Nine Elms to the Port of Southampton, 77 miles, with a branch to Gosport, 15 miles.
On the London and Blackwall Railway.
Great Western Railway, from London to Slough, 18 miles—the Windsor Telegraph.
Yarmouth and Norwich Railway, a "Single Way," 20 miles.
London and Dover Railway, from Tunbridge to Maidstone, a "Single Way," 15 miles.
Part of the Leeds and Manchester Railway.
Part of the Glasgow and Glasgow Railway.
The Dalkey (atmospheric) Branch of the Dublin and Kingstown Railway.
London and Birmingham Railway—viz. from Northampton to Peterborough—a "Single Line," 47 miles.

In addition to the above, the Telegraph is about to be laid down on several "single lines" in different parts of England, Scotland, and Ireland.

Mr. Cooke is prepared to grant licenses for the use or erection of the Telegraph for entire districts of the country, the boundaries can be accurately defined.

Mr. Cooke will also undertake to erect a Telegraph in any part of the United Kingdom for a fixed amount.
For further particulars apply to W. Fothergill Cooke, Esq., Kidbrooke, Blackheath; or to Robert Wilson, Esq., solicitor, 1, Copthall-buildings, London.

SUSPENSION BRIDGES.—ANDREW SMITH'S PATENT.

GALVANISED WIRE ROPE AND CHAIN SUSPENSION, OR PARABOLIC TENSION, BRIDGES, are so constructed that the lateral oscillation and vibration (so destructive on the ordinary suspension principle) are entirely prevented by this improvement. For deep ravines or cuttings, the Parabolic Tension Bridge costs much less than those of the suspension principle—piers, &c., being entirely dispensed with.

Drawings and models may be seen, and all necessary information had, on application at the offices, White Lion-court, Cornhill; 69, Princess-street, Leicester-square; or at the works, Millwall, Poplar.

SIR W. BURNETT'S PATENT—THE CHEAPEST AND BEST PROCESS FOR THE PRESERVATION OF TIMBER, CANVAS, CORDAGE, COTTON, WOOLLEN, &c.—LICENSES GRANTED TO NOBLEMEN AND GENTLEMEN.

to use the preparation; and to others, for the purposes of trade, on advantageous terms.
HYDRAULIC APPARATUS AND TANKS.
For the expedition preparation of the above materials, at the principal station, MILLWALL, near Poplar, nearly opposite Greenwich.

Numerous SPECIMENS and TESTIMONIALS may be seen, and every information obtained, at the office, 53, King William street, London-bridge.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

SMART'S ELLIPTICAL CONVEX METALLIC FLOATS, FOR STEAM-SHIPS, as applied to the Bristol and Dublin steamer SHAMROCK, and to the SWIFT, between Newport and Bristol; and also to the OSPREY, running between Bristol and Waterford. The patentee has now the satisfaction to announce, that, in addition to the ships already named, he has granted a LICENSE to the Bristol General Steam Navigation Company to use his PATENT FLOAT in all their steam-ships, comprising the Dublin, Cork, Waterford, and the various channel post steamers, varying in power from forty horses to two hundred each.

The numerous ADVANTAGES attending this valuable invention may be stated as follows:

1. The appearance of these floats is light and elegant.
2. Their durability and stability are indisputable, as may be instanced by the SHAMROCK steamer, which has been fitted with them for nearly twelve months, and has since steamed twenty-five thousand miles. The floats are now as firm and good as they were the first day.
3. Vibration is reduced so as to be scarcely perceptible; thus, the engines are eased, and both they and the ship suffer less wear and tear; and, from their peculiar form, they are strikingly advantageous in cases of strong head wind and heavy sea. Backwater and undulation is reduced to its smallest quantum, and thereby lessening the chance of accident to small boats, barges, &c., which has hitherto been consequent on the operation of the common paddle-float, particularly in crowded rivers.
4. They more readily arrest the progress of a ship in chances of a collision, the concave side taking the water when this operation is performed. This is of great importance in preventing collisions, or backing off a shore.
5. They are very simple, and are easily applied to any paddle-wheel, at nearly the same cost as the common float, and THEY INCREASE THE SPEED MORE THAN ONE KNOT PER HOUR.

For license to use them (for which the charge is 10s. per horse-power), apply to the patentee, Mr. ROBERT SMART, 8, Grenville-place, Hotwells, Bristol, who will personally attend the fitting, if required, his travelling expenses being paid.

AGENTS.

Messrs. George Lunell and Co., engineers and shipbuilders, Bristol.
W. J. Le Feuvre, Esq., Southampton.
J. N. Smart, Esq., Swansea.
Thomas Mowatt, Esq., engineer, Leith, near Edinburgh.
Scott, Sinclair, and Co., Greenock.
W. H. Hutchinson, Esq., Hull.
J. R. Pim, Esq., Dublin and Liverpool.
Jukes, Coulson, and Co., 12, Clement's-lane, London.
* Testimonials of the highest order, on application to the patentee or his agents. Bristol, December, 1844.

EUROPEAN LIFE INSURANCE AND ANNUITY COMPANY.

Instituted Jan., 1819.—Empowered by Special Act of Parliament, 7 and 8 Vic., cap. 48.
OFFICE—No. 10, CHATHAM-PLACE, BLACKFRIARS.

BOARD OF DIRECTORS.

JOHN ELLIOT DRINKWATER BETHUNE, Esq., 80, Chester-square, Chairman.
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John Thoyne, Esq., 8, Foley-place.

This Old Established Society has recently received ADDITIONAL POWERS, by Special Act of Parliament, and affords FACILITIES in effecting INSURANCES to suit the views of every class of insurers.

PREMIUMS are received yearly, half-yearly, or quarterly, or upon an increasing or decreasing scale.

Two-thirds of the profits are added septennially to the policies of those insured for life; one-third is added to the guarantee fund for securing payment of the policies of all insurers.—Those who are insured to the amount of £500 and upwards for the whole term of life, are admitted to vote at the half-yearly general meetings of the proprietors.

Annual Premium for insuring £100 on a single life:—

Age next birth-day. 20. 30. 40. 50. 60. 70.
Premium £1 18 1...£2 8 1...£3 2 6...£4 5 6...£5 5 8
DAVID FOGGO, Secretary.

GREAT BRITAIN MUTUAL LIFE ASSURANCE.

14, WATERLOO-PLACE, PALI-MALL, LONDON.
THE CHISHOLM, Chairman.
WILLIAM MORLEY, Esq., Deputy-Chairman.

GREAT ADVANTAGES OFFERED TO POLICY HOLDERS BY THIS INSTITUTION.

A large and immediate accession of assurances by the transfer of the policies of the "Achilles British and Foreign Life Assurance Association."

The whole of the PROFITS DIVIDED annually among the MEMBERS, after payment of five annual premiums.

An ample guaranteed capital, in addition to the fund continually accumulating from premiums, fully sufficient to afford complete security.

CREDIT given to MEMBERS for half the amount of the first five annual premiums without security.

CREDIT allowed to MEMBERS for the whole of the first five annual premiums, on satisfactory security being given for their payment.

Transfers of policies effected and registered (without charge) at the office.

Claims on policies not subject to be litigated or disputed, except with the sanction, in each case, of a general meeting of the members.

An extremely low rate of premium, without participation in the profits, but with the option, at any time within five years, of paying the difference between the reduced rates and the mutual assurance rates, and thus becoming members of the society, and entitled to a full participation in the profits.

Extract from the Reduced Scale of Rates, for an assurance of £100.

Age.	One Year.	Seven Years.	Whole Life.
20	£1 0 9	£1 6 6	£1 13 11
30	1 2 9	1 3 3	2 1
40	1 5 6	1 7 6	2 16 4
50	1 15 9	2 1 6	4 1 11
60	3 3 5	3 17 0	6 8 3

Full particulars are detailed in the prospectus.
A. R. IRVINE, Managing Director.

Just published, a new and important Edition, price 2s. 6d.; free by post, 3s. 6d.

THE SILENT FRIEND: a medical work, on Human Frailty.

Nervous Debility, constitutional weakness, excessive indulgence, &c.; with Observations on Marriage, &c. By R. and L. PERRY and Co., surgeons, London. Published by the authors, and sold at their residence; also by Strange, 21, Paternoster-row; Hannay and Co., 63, Oxford-street; Noble, 109, Chancery-lane; Gordon, 145, Leadenhall-street; Purkiss, Compton-street, Soho, London.

THE CORDIAL BALM OF SYRIACUM is a stimulant and renovator in all spasmodic complaints. Nervous debility, indigestion, asthma, and consumption, are gradually and imperceptibly removed by its use, and the whole system restored to a healthy state of organization. Sold in bottles, price 11s. and 33s.

THE CONCENTRATED DETERGENT ESSENCE.—An anti-syphilitic remedy, searching out and purifying the blood from venereal contamination, scurvy, blotches on the head, face, and body, ulcerations, and those painful affections arising from improper treatment, or the effects of mercury, removing secondary symptoms, and all eruptions of the skin. Price 11s. and 33s. per bottle; also £5 cases.

PERRY'S PURIFYING SPECIFIC PILLS have long been used as the most certain remedy for scurvy complaints of every description, eruptions of the skin, pimples on the face, and other disagreeable affections, the result of an impure state of the blood. These pills are perfectly free from mercury, calomel, and other deleterious drugs, and may be taken with safety without interference with or loss of time from business, and can be relied upon in every instance. Sold in boxes, at 2s. 9d., 4s. 6d., and 11s. each, by all medicine vendors, of whom may be had the Silent Friend.

Messrs. Perry and Co. may be consulted at their residence, 19, Berners-street, Oxford-street, daily, from eleven till two and five till eight. On Sundays from ten till twelve.

LEICESTER, ASHBY-DE-LA-ZOUCH, BURTON-UPON-TRENT, AND STAFFORD JUNCTION RAILWAY.

(Provisionally Registered.)
Capital £200,000, in 16,000 shares, of £20 each.—Deposit £2 15s. per share.

This line of railway is proposed to commence at the Syston station, on the Midland Counties line, and proceed, by way of Woodhouse and the Charnwood Forest Canal, to Cole-Orton and Ashby-de-la-Zouch; thence, by Swadlincote, Gislely Pottery, and the course of the projected Burton and Moira Canal, to Burton-upon-Trent; whence, crossing the Trent, it will skirt the Forest of Needwood near Tatenhill, Hampstall Biddware, Blithbury, and Colton, to the proposed junction of the North Staffordshire Pottery line with the Trent Valley Railway at Colwich, and, on the latter line, to Stafford.

The Leicestershire Banking Company, Leicester, Ashby-de-la-Zouch, and Atherstone. The Burton and Uttoxeter Banking Company, Burton-upon-Trent and Uttoxeter.

The prospectus, list of provisional committee, contemplated traffic, &c., will be published in a few days; and, in the meantime, all applications for shares must be made to the joint-solicitors, Mr. Richardson and Mr. Hutchinson, 36, Coleman-street, London; or to Messrs. Dutton and Saben, Stafford; Mr. T. Fiddocks, Ashby-de-la-Zouch; or Messrs. Bass and Sweeting, Burton-upon-Trent.

LONDON CENTRAL RAILWAY TERMINUS.

(Provisionally Registered.)
Capital £200,000, in 25,000 shares, of £20 each.—Deposit £1 per share.

JOHN ADDIS, Rotherhithe.
William Bland, Esq., Brixton-road, director of the North Wales Railway.
William Chadwick, Esq., 29, Montague-square, director of the Richmond Railway Company.

Edward Chapman, Esq., Old Brompton, director of the Richmond Railway Company.
Charles Finch, Esq., Staines, director of the Staines Railway Company.
John Godfrey Hudson, Esq., St. George's-terrace, Hyde-park, director of the Great Munster Railway.

Andrew Inderwick, Esq., R.N., United Service Club, chairman of the London Conveyance Company.
George Miller, Esq., Mount-street, Grosvenor-square, director of the Hungerford-bridge Company.

Aspley Pellatt, Esq., Staines, director of the Staines Railway Company.
W. Shadbolt, Esq., Croom's Hill, late chairman of the Greenwich Railway.
T. B. Simpson, Esq., Rutland Lodge, Brixton, director of the Richmond Railway Company.

Henry Lewis Smales, Esq., Doctor's Commons, director of the South Eastern Railway Company.
John Wheelton, Esq., Meopham Bank, Tonbridge, Kent, director of the Taft Vale and Trent Valley and Holyhead Junction Railways.

C. F. Whitting, Esq., Beaufort House, Strand, director of the Richmond Railway.
William Lechmere Whitmore, Esq., 19, James-street, Buckingham-gate, director of the Great Western Railway (Irish).

(With power to add to their number.)
BANKERS—London Joint-Stock Bank; London and County Bank.

ENGINEERS—J. Locke, Esq.; T. Page, Esq.; Engineer for the Thames Embankment.
SOLICITORS—Messrs. Bircham and Dalrymple, Bedford-row; William Chapman, Esq., 3, Arundel-street, Strand.

SURVEYORS—Messrs. Emmett and Co., 3, John-street, Adelphi.
SECRETARY—John F. Neale, Esq.

The object which has for a long time occupied the attention of every railway proprietor whose line terminates near the metropolis—viz., the attainment of some point for their terminus situated more centrally, and with readier access to London travellers than their present sites, appears now to be in course of completion.

Two principal lines of railway, the South-Western and South-Eastern, have proposed and intend to carry into effect extensions of their lines from the existing termini to the neighbourhood of the Waterloo and Hungerford-bridges, and to this point the traffic from Birmingham and the north of England will also be enabled to proceed, through the contemplated extension of the West London Railway, across the Thames to a junction with the South-Western line. The perfect attainment of the object in view will, however, remain unaccomplished, so long as the terminating point is kept on the south side of the river; since, although a considerable improvement as compared with the present positions, it will thereby be effected, still the station in the Waterloo-bridge-road is remote and inconvenient to the larger proportion of travellers, and the evils now so justly complained of will be far from completely obviated.

It is with the view of supplying this deficiency that the promoters of the London Central Railway Terminus lay their project before the public. They propose to provide means whereby the passenger carriages from every line in connection with the metropolis, can be conveyed across the Thames to a general station erected in the immediate vicinity of Charing-cross.

For this purpose plans have been prepared, which have received the approval of the most eminent engineers for carrying adouble line of rails over the river, adjoining the new Hungerford Suspension-bridge, and supported by a simple and inexpensive addition to the present erections of that structure.

For the vast amount of traffic which will thus be brought to the Middlesex side of the river, it is intended to provide a central station of corresponding magnitude. The company therefore propose to undertake the execution of part of the embankment (according to the plan of the Government for embanking the Thames) for the distance lying between Waterloo and Hungerford-bridges, and over part of the area thus obtained from the river, to erect a station of size sufficient to supply the purposes of every separate railway, and furnished with every requisite provision for the wants of the respective companies and the convenience of their passengers. The property of the company will extend through the whole frontage of the Adelphi-terrace; the present buildings of which, as well as those to be hereafter erected, will be admirably adapted for a series of splendid hotels.

This project would have been before the public at an earlier period, but the projectors were desirous of obtaining the full concurrence of her Majesty's Commissioners for Metropolitan Improvements; and they are now enabled to state, that the plans have been laid before the Commissioners, and, as far as relate to the embankment and terminus, have met with their decided approval.

On the south side of the river the proposed railway will join the several extension lines at their nearest point of approach to the Thames and to each other, and thus will constitute a leader into the heart of London for the Birmingham, South-Western, Brighton, and South-Eastern lines, at present existing, as well as for the various proposed lines through Kent, and to Richmond and Staines, which will shortly be in course of construction. The directors of several of the above-mentioned companies have already expressed their approval of the undertaking; but the advantages it offers are so great and obvious that there can be no doubt of the cordial co-operation of the managers and proprietors of the other lines, without exception.

The plan presents no features of difficulty, or involving the necessity of any extraordinary expense. The ground to be occupied by the station will, from its peculiar character, be obtainable at a comparatively small cost; and from estimates carefully prepared, it is proved that a capital of £500,000 will be sufficient for the accomplishment of every purpose in contemplation. This capital it is proposed to raise in 25,000 shares, of £20 each.

In order to favour the multitudinous travellers for short distances out of London, the toll charged to passengers for any station short of twenty miles will be less than that required from those bound on more extended journeys, and who are more likely to be encumbered with luggage. An average of 2d. has been assumed upon the whole number estimated.

From the traffic returns of the railways now completed, together with the increase to be derived from the lines at present before Parliament, it is estimated that the annual number of arrivals and departures of passengers from their London termini, who will select the central station for their landing point, will amount to 5,500,000; the gross receipt from whom, at a toll of 2d. each, will be £45,000 per annum. From this amount a deduction of 20 per cent. for working expenses, &c. (including the rental to the proprietors of Hungerford-bridge) will be amply sufficient, as the company will have no need of locomotives, and therefore be freed from those items which occasion the heaviest expenditure on other railways. This will leave a net profit of £36,000 per annum for the tolls alone. To this must be added the profits that will be derived from the various wharfs and buildings, and from the proposed pier for steam-boats, amounting, on the most moderate calculation, to an annual rental of at least £15,000. With this addition, the total returns will amount to somewhat more than 10 per cent. on the capital required. The completion of every new railway, and the opening of every extension line or feeder to the existing railways, will produce a constant increase in the revenue of the proposed line, and promise to raise it most rapidly to an important rank as an investment for capital.

The provisional committee have also taken into consideration a plan for extending the proposed embankment and railway from the great central station to some point nearer the city, and are deeply impressed with the great public advantages derivable from such an undertaking.

This plan has been referred to the engineer and surveyors of the company, whose report thereon may be expected in a short time, when the estimates of the additional expense, and other particulars, will be duly announced.

Forms of application and prospectuses may be obtained at the offices of the company, 28, Moorgate-street, or from the solicitors, Messrs. Bircham and Dalrymple, 15, Bedford-row; William Chapman, Esq., 3, Arundel-street, Strand; and at the undermentioned brokers—Liverpool, Messrs. Parsons and Co.; Manchester, Messrs. Cardwell and Co.; Leeds, Messrs. Watson and Co.; and Messrs. Bell and Rhodes; Hull, Messrs. Collinson and Flint.

FORM OF APPLICATION.
To the Provisional Committee of the London Central Railway Terminus.
Gentlemen,—I request you will allot to me shares of £20 each in this company, and I undertake to accept the same, and to pay the deposit thereon, or upon any lesser number that may be allotted to me, such payment to be made within the time limited and prescribed by you, and I undertake to execute the agreement and Parliamentary contract when required.

Name in full.....
Trade or profession.....
Residence.....
Place of business (if any).....
Date.....
Reference.....

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

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EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

EAST INDIAN RAILWAY COMPANY.

PROVISIONALLY REGISTERED.
Capital £4,000,000, in 80,000 shares of £50 each.—Deposit 5s. per share, being the largest deposit allowed by the Act 7 and 8 Vic., c. 110, which limits the deposits on shares in a company until final registration to 10s. per cent.

CHAIRMAN—Sir GEORGE LARPERT, Bart. (Messrs. Cockerell and Co.)
DEPUTY-CHAIRMAN—BAZETT D. COLVIN, Esq. (Messrs. Crawford, Colvin, and Co.)

R. Gurney Barclay, Esq. (Messrs. Barclay Brothers and Co.)
Alexander Beattie, Esq. (Messrs. Beattie and Co.)
C. D. Bruce, Esq. (Messrs. Bruce, Fletcher, Alexander, and Co.)

Sir John Campbell, K.C.H., deputy-chairman of the Peninsular and Oriental Steam Navigation Company.
Major-General Caulfield, C.B., late of the Hon. East India Company's Service.

T. S. Kelsall, Esq. (Messrs. Kelsalls and Co.)
John Pascal Larkins, Esq. formerly of the Bengal Civil Service, and President of the Marine Board.

Capt. Alexander Nairne, Esq. (Messrs. Palmer, Mackillop, Dent, and Co.)
Edward Howley Palmer, Esq. (Messrs. Palmer, Mackillop, Dent, and Co.)

William Scott, Esq. late of Madras (Messrs. Scott, Bell, and Co.)
John Stewart, Esq. late of Bombay.

MANAGING DIRECTOR—R. Macdonald Stephenson, Esq.

AUDITORS.
R. F. Gower, Esq. (Messrs. Gower, Nepheve, and Co.); Captain Farquharson, R.N.

BANKERS—Messrs. Glyn, Halifax, Mills, and Co.
SOLICITORS—Messrs. Freshfield.

CONSULTING ENGINEER—J. M. Rendel, Esq. F.R.S.

TEMPORARY OFFICES, 8, AUSTINFRIARS.

The gentlemen who form this association have had various communications with the court of directors of the Hon. East India Company, the substance of which will be found in the correspondence between Sir George Larpert and Mr. Stephenson on the part of this company, and Mr. Melvill, the secretary to the East India Company, published with the prospectus.

The operations of the company will be under the direct superintendence of the Government of Bengal, and the working thereof to be subject to the inspection and sanction of their officers, so as to bring the arrangements into a position as nearly analogous to that of the British railways, under the Board of Trade, as the different circumstances of the two countries may render practicable.

The deposit to be made on subscription will be 5s. per share, which is the extreme amount allowed to be taken as a deposit on a share of £50 by a company previous to complete registration.

Applications for the prospectus or shares to be made to Mr. Stephenson, the managing director; to Messrs. Lawrence, Cazenove, and Co.; and to Messrs. Carden and Whitehead, stock and sharebrokers, and no application will be attended to unless accompanied by a reference.

FORM OF APPLICATION FOR SHARES.
To the directors of the East Indian Railway Company.

Gentlemen,—I wish to become a subscriber for shares in this undertaking, of £50 per share, the deposit upon which, or on any lesser number of shares, that may be allotted to me, I agree to pay, and I also undertake to sign the necessary deeds, when required so to do.

I am, gentlemen, your obedient servant,
Name.....
Address.....
Date.....
Reference.....

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

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EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

EDWARD BERNARD NEILL, Secretary.

PATENT FUEL COMPANY.

To be incorporated by Act of Parliament.
Provisionally registered, pursuant to the Act 7th and 8th Vic., cap. 110.
Capital £200,000, in 10,000 shares of £20 each.—Deposit £2 per share, payable after complete registration.

DIRECTORS.
Sir George Rich, Lowndes-street, Belgrave-square, Chairman.
George Brockbank, Esq., Grosvenor-hill, Greenwich.
George Augustus Brown, Esq., Gower-street.
Colin Child, Esq., Lambeth.
William Dallas, Esq., Aston-inferior.
Thomas Lawrence, Esq., Lee, Kent.
George Smith, Esq., Frederick's-place, Old Jerry.
James Trill, Esq., Blackheath.
F. J. Van Zeller, Esq., Jeffrey's-square.

BANKERS.
Messrs. Spooner, Atwoods, and Co.; Messrs. Cockburn and Co.
Solicitors—Edmund John Scott, Esq., St. Mildred's-court, Poultry.
MANAGER OF THE MANUFACTURING DEPARTMENT—F. C. Warlich, Esq.

SECRETARY.—William Nicholas De Mattos, Esq.
This company is formed for the purpose of manufacturing, under an exclusive grant, for the benefit of the company, upon an extensive scale, at various parts of the United Kingdom, the Fuel for which Warlich has obtained Letters-Patent, and for granting licences under the same, to parties who may be desirous of making the Fuel.

This Fuel is applicable to the following purposes:—
1. Steam-Boats and Stationary Engines.
2. Locomotives.
3. Household Use.

The quality of this Fuel has been proved most satisfactorily by experiments, made by the order of the Admiralty, at Woolwich Dockyard, and in several of the Government steamers. As an additional proof of the high opinion the Government have of this Fuel, a large quantity has recently been delivered at Woolwich Dockyard, for the purpose of being sent out with the expedition to the North Pole; and a cargo of 200 tons is now in being sent out with the expedition to Sierra Leone, by order of the Admiralty; and the Right Hon. the Earl of Londonderry has purchased a license to manufacture the Fuel at his extensive collieries at Whitehaven. It may be briefly stated, that the advantages to be derived from this Fuel are as follows:—

1. A Saving in Expense of 24 per cent.
2. A Saving in Wear and Tear of Machinery for Steam purposes.
3. A Saving in Space required for Storage, at the rate of 83 per cent.
4. A Greater Degree of Cleanliness.

Prospectuses, with full details of the company's object, together with forms of applications for shares, may be obtained at the office of the solicitor of the company, 6, St. Mildred's-court, Poultry; or of the secretary, at the company's temporary offices, 5, Jeffrey's-square, St. Mary-axe, London.

PATENT FUEL COMPANY.—THE DIRECTORS OF THE PATENT

Fuel Company are prepared to RECEIVE OFFERS for eligible SITES for the ERECTION OF WORKS, each site comprising about three acres of ground, in or near the following towns:—Swansea, Cardiff, Liverpool, Bristol, Newcastle or Shields, Middlesbrough, and Sunderland. Parties having land in either of the above places suitable for the purpose, are requested to forward full particulars to the secretary, 5, Jeffrey's-square, St. Mary-axe, London.

PATENT FUEL COMPANY.—TO COLLIERY OWNERS.

The directors of the Patent Fuel Company are prepared to RECEIVE TENDERS for ONE HUNDRED THOUSAND TONS OF SMALL COALS, to be taken from the pit's mouth, or at the port of shipment, as may be agreed upon. The name and quality of the coal, the quantity that can be supplied, and the lowest price per ton, stated.—Letters to be addressed to the secretary, 5, Jeffrey's-square, St. Mary-axe, London.

LEEDS, DEWSBURY, AND MANCHESTER RAILWAY.

MORLEY TUNNEL CONTRACT.—The directors of the Leeds, Dewsbury, and Manchester Junction Railway will RECEIVE TENDERS as under for executing the works on that part of the railway extending from the Leeds and Elland turnpike-road, near to Churchwell, to a point between Howley Lower Mill and Baily, being a length of about 4½ miles. The principal work on this division of the railway is the Summit Tunnel, which is upwards of 3000 yards in length. The remainder of the section comprises the usual works of excavation, embankment, masonry, ballasting, laying rails, &c. The working drawings and specifications will be ready for inspection of contractors at the railway company's office, No. 6, Butts-court, Leeds, from Monday, the 9th, to Saturday, the 21st of June. Tenders to be sent in sealed or printed forms (which will be furnished at the office), addressed to the chairman of the board of directors, on or before Thursday, the 30th of June. The directors will meet at Leeds on Friday, the 27th of July, at twelve o'clock, when parties tendering, or their authorized agents, are to be in attendance. The directors will not consider themselves bound to accept the lowest offer.
Leeds, May 8, 1845.

SHREWSBURY AND BIRMINGHAM RAILWAY.

The committee of management of the Shrewsbury and Birmingham Railway, in acquitting their shareholders that the attempt of the Grand Junction Company to occupy a portion of the country intended to be benefited by this company has been frustrated, have also much satisfaction in stating that active arrangements are now in progress for securing the complete success of this important undertaking in the next session of Parliament, and particularly with the concurrence of the London and Birmingham Railway Company and the Birmingham Canal Company, as to the portion of the line of railway through the South Staffordshire mining district. The committee trust, in the course of a few days, to be enabled to make a more detailed communication to the shareholders.
3, Moorgate street, May 26, 1845. By order, GEO. KNOX.

WATERFORD, WEXFORD, WICKLOW, AND DUBLIN

RAILWAY COMPANY, No. 449, West Strand, London, May 23, 1845.—Notice is hereby given, that, at a general meeting of the provisional committee of the above company, held here this day (Thomas Wye, Esq., M.P., in the chair), the following gentlemen were appointed a COMMITTEE OF MANAGEMENT to conduct the affairs of the company:—

The Earl of Courtown
Lord Viscount Duncannon, M.P.
Sir Thomas Esmond, Bart. M.P.
Thomas Wye, Esq., M.P.
Stephen Barr, Esq.
Daniel Tighe, Esq.
Thomas N. Redington, Esq., M.P.
Lord Viscount Barrington, M.P.
W. G. Hayter, Esq., M.P.
Frederick Pratt Barlow, Esq.
R. Bernal Osborne, Esq., M.P.
John Crosswhite, Esq.
P. D. Hadow, Esq.
John Macdonnell, Esq.
Louis Vigners, Esq., director of the South Wales Railway.
Directors of the Great Western and of the South Wales Railway Companies.
And Notice is hereby further given, that the committee of management will proceed forthwith to the allotment of the shares in the above company.
By order, RICHARD M. MUGGERIDGE, Sec. pro tem.

TO ENGINEERS, RAILWAY CONTRACTORS, MINING

AGENTS, IRONMASTERS, AND OTHERS REQUIRING FINE GREASE FOR MACHINERY AND AXLES of every description.—JOSEPH PERCIVAL'S IMPROVED ANTI-FRICTION GREASE is—after trials on machinery and axles of every kind where constant friction kept up—admitted to be the most useful, economical, and best preparation of the kind ever offered to the public.

References to scientific and practical men can be given, and testimonials show great excellence.—Samples forwarded on application at the manufactory, Green-street, Wellington-street, Blackfriars-road, London.

THE PATENT SAFETY FUSE.

FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the SAFEST, CHEAPEST, and most EXPEDIENT MODE of effecting this very hazardous operation. From many testimonials to its usefulness with which manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c.:—"I am very glad to hear that my recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should employ my name as evidence of the Manufacture and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Exeter, Cornwall."

THE PATENT GALVANISED IRON COMPANY

beg leave to announce to the public, that they are prepared to SUPPLY ROOFING, SHEATHING AND FASTENINGS, CHAINS, and the endless variety of articles to which iron, not subject to rust, may be applied.—Testimonials may be seen by application at the office, 3, Mansion House-place, London.

CAUTION.—THE PATENT GALVANISED IRON COMPANY

HAVING ascertained that certain PARTIES are INFRINGING THEIR PATENT by the MANUFACTURE and SALE of a SPURIOUS and COUNTERFEIT ARTICLE, to the injury of the company and the detriment of the public, hereby give NOTICE, that this COMPANY have the SOLE PRIVILEGE of manufacturing and selling IRON COATED WITH ZINC, commonly called "Galvanised Iron," and that they will inflict the utmost PENALTIES of the law upon all PERSONS MANUFACTURING or SELLING the same without their authority, as well as upon all persons buying or using any Galvanised Iron not manufactured by them, or sold by their authority.
3, Mansion House-place, London, Jan. 24, 1845.

PATENT IMPROVEMENTS IN CHRONOMETERS.

WATCHES, AND CLOCKS.—E. J. DENT, 82, Strand, and 33, Cockspur-street watch and clock maker, by APPOINTMENT, to the Queen and His Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6 s. each; in gold cases, from £10 to £10 extra. Gold horizontal watches, with gold dials, from 8 s. to 12 s. each.

DENT'S PATENT DIPLIODESCOPE, or meridian instrument, is now ready for sale. Pamphlets containing a description and directions for its use, 1s. each, but to customers gratis.

OFFICE FOR PATENTS, 7, STAPLE INN, HOLBORN.

J. MURDOCH (successor and late assistant to Mr. Hebert) informs INVENTORS and PATENTERS, that at his OFFICE they can obtain REFERENCE TO A CLASSIFIED LIST OF PATENTS.

THE ONLY ONE EXTANT, which shows at one view all the Patents ever granted for any particular object, whereby they may save much trouble and expense, and procure information not otherwise obtainable. BRITISH AND FOREIGN PATENTS OBTAINED, and USEFUL and ORNAMENTAL DESIGNS REGISTERED. SPECIFICATIONS carefully prepared, and REPORTS of ENROLLED SPECIFICATIONS furnished on moderate terms. FINISHED and WORKING DRAWINGS executed with accuracy and despatch.

NOTICE TO INVENTORS.—OFFICE FOR PATENTS

OF INVENTIONS AND REGISTRATIONS OF DESIGNS, 14, LINCOLN'S INN-FIELDS.—The printed INSTRUCTIONS gratis, and every information upon the subject of PROTECTION for INVENTIONS, either by Letters Patent or the Designs Act, may be had by applying personally, or by letter, pre-paid, to Mr. Alexander Price, at the office, 14, Lincoln's Inn-Fields.

NORTH LONDON JUNCTION RAILWAY.

PROVISIONALLY REGISTERED.
Capital £800,000, in 32,000 shares, of £25 each.—Deposit £1 7s. 6d. per share.

PROVISIONAL COMMITTEE.

John Atwood, Esq., M.P., Park Lane.
Lieutenant-General Sir Loftus Otway, 13, Grosvenor-square.
Sir John Edward de Beauvoir, Bart., London.
J. H. Atwood, Esq., Upper Seymour-street, Portman-square.
Robert Abraham, Esq., York-terrace, Regent's-park.
John Bagshaw, Esq., Gloucester-place, Portman-square.
R. Belton, Esq., 4, Audley House, Highgate.
George Bishop, Esq., South Villa, Inner-circle, Regent's-park.
J. Brown, Esq., director of the Trent Valley Continuation Railway.
Thomas Harrison, Esq., York-terrace, Regent's-park.
W. Hughes Hughes, Esq., Alderman of the City of London, director of the Greenwich Railway.
William Samuel Jones, Esq., 16, Chester-terrace, Regent's-park.
G. George Farbury, Esq., Russell square, director of the Manchester and Birmingham Continuation Railway.
Nicholas Wood, Esq., Durham.
BANKERS.—Messrs. Denison, Heywood, Kennards, and Co., London.
ENGINEER.—George Parker Biddier, Esq.
SOLICITOR.—John Bethell, Esq., 78, King William-street, City.

SECRETARY (pro tem).—Robert Steele, Esq.

The necessity of a City terminus for the large railways on the north of London (which bring the traffic to the metropolis from the greatest part of England, and from all Wales, Ireland, and Scotland), has been long felt, and has been particularly noticed and reported upon by the Board of Trade.

This railway removes that defect, as by it two City termini will be provided; one close to the bottom of Moorgate street, and the other at Farringdon-street, for the Great Western, the London and Birmingham, the London and York, or the Direct Northern (whichever is made), and the Northern and Eastern; and it will also connect all these railways with each other.

It will commence at the terminus of the Great Western Railway, at Paddington, and proceed across the Edgware-road, along the back of Lord's cricket ground, across the Avenue road, under Primrose-hill, to the London and Birmingham Railway (which it will cross on a level, or a viaduct, as may be preferred); thence across the Hampstead-road, the Kentish Town road, through the fields, across Maiden-lane, forming a junction there with the proposed London and York Railway, or the Direct Northern; across the Holloway-road, up to a point near Islington Church, thence curving round to the Regent's Canal, near to Frog-lane and the City Lock, across the canal there, along the back of Macclesfield street, crossing the City-road, and passing close by Messrs. Pickford and Co.'s warehouse, thence proceeding to, and across, Old-street and Chiswell street, to a spot near to the corner of Fore street and Little Moorfields, near the bottom of Moorgate-street, where will be one City terminus, from which a branch is proposed to be made to join the Eastern Counties Railway terminus at Shoreditch.

From the Regent's Canal, at the City Lock, another branch of this line will proceed down the Tottenham Extension Railway to Farringdon-street (the Act for which is now before Parliament), which will be the other City terminus. All the house property required to be taken is of comparatively little value, being chiefly small or fourth rate houses.

Very careful surveys and estimates have been made of this line, and the above estimate will be found to be correct.

It is hardly possible to estimate the enormous traffic, in passengers and goods, that will pass over this railway, for not only will it take the passengers to and from the above-named railways, but also all the local passengers from the neighbourhood of Bayswater, Hyde-park gardens, Oxford terrace, Edgware-road, Maiden-lane, St. John's wood, Regent's-park, Camden-town, Hampstead, Kentish-town, Holloway, Highgate, Islington, &c., &c., will be carried by it to Moorgate-street or Farringdon-street; and for the purpose of collecting such passengers, it is proposed that carriages in connection with the railway, shall ply constantly from the stations to points not exceeding one mile and a half distant, which distance will include all the places above named.

In addition to the traffic, a large revenue will be obtained from the ground rents for the land left off for building sites, which will be unusually large on this line, from its situation, and from the arrangement of the railway, whereby all the land at the City end will be available for new houses, and will be formed into a new street, &c., &c.

The time for conveying passengers to Moorgate-street, from the Great Western Railway, will be nine minutes; the London and Birmingham, six minutes; and other places in the same proportion. All the goods now removed from the above great railways by carts and waggon, will also be conveyed by this railway to the City, and to Messrs. Pickford's large warehouses, in a few minutes, and at a trifling expense. Great portion of the capital has been already subscribed.

Application for prospectus, plans, and shares, may be made to the secretary, at the office, 78, King William-street, City, London, and the following shareholders:—Thomas Allport, Esq., 34, Cornhill; Messrs. Houghland and Leese, 31, King-street, Manchester; John Wills, Esq., Royal Bank-buildings, Liverpool; Messrs. Well-beloved and Oastler, Leeds; Messrs. Edwards and Son, Bristol; I. R. Lane, Esq., Birmingham, or any of the other local agents.

NEWRY AND WARRENPOINT RAILWAY.

Capital £70,000, in 3500 shares, of £20 each.—Deposit £3 per share.

Provisionally registered, pursuant to 7th and 8th Vic., c. 110.

PROVISIONAL COMMITTEE.

[The list of the provisional committee will appear in a few days.]

MANAGING COMMITTEE.

CHAIRMAN.—ANDREW SPOTTISWOODE, Esq., 17, Carlton terrace, director of the Namar and Liege, Paris and Lyons, and Great Northern of France Railways, and deputy-governor of the Union Bank of London.

James Boyle, Esq., 4, Essex court, Temple.

H. Pratt Barlow, Esq., Kensington Square.

Rev. H. Fowler, 7, Manchester-square.

W. A. Shaw, Esq., director of the Shrewsbury and Trent Valley Union Railway.

Alfred Rickets, Esq., Westbourne-terrace, Hyde-park gardens, director of the Cork and Waterford Railway.

(With power to add to their number.)

ENGINEER.—Sir John M. Neil, F.R.S., M.R.I.A., &c.

BANKERS.

Union Bank of London; Bank of Ireland; its branches; Provincial Bank and its branches; Liverpool Bank, Liverpool.

SOLICITORS.—Messrs. Edwards, Mason, and Edwards, Delahay-street, Westminster.

PARLIAMENTARY AGENT.—C. F. Waddy, Esq., 103, Jernyn-street, St. James's.

SECRETARY (pro tem).—H. Thunders, Esq.

OFFICES.—41, CHARING-CROSS, LONDON.

PROSPECTUS.

This railway is projected for the purpose of connecting the important commercial town of Newry with its shipping port and harbour, Warrenpoint, well known as being one of the most beautiful and romantic watering places, as well as one of the safest and best harbours in the north of Ireland. The entire length of railway, commencing at or near the proposed terminus of the Newry and Enniskillen Railway, to which this line will be an important adjunct, and the station of the Dublin and Belfast Junction Railway, in the town of Newry, and terminating at the quay of Warrenpoint, will not exceed six statute miles. Those acquainted with this highly-favoured locality, and who are aware of the great traffic already existing between Newry and Warrenpoint, it must be apparent that the proposed railway will prove one of the most remunerative lines hitherto projected.

A preliminary survey has already been made, from which it appears that there are no engineering difficulties, the whole line being almost a perfect level along the margin of the Newry river; and as the line will not interfere with any ornamental ground, and the cost of the land required is comparatively small, the expense of construction will be much below the average. The materials for construction are cheap, abundant, and convenient, and every facility and support for carrying out the proposed railway is confidently expected from the landed proprietors along the line.

The bay of Carrlingford (to which Warrenpoint is situated) affords an accommodation for maritime traffic unsurpassed by any other harbour in Ireland; and as two powerful and well-appointed steamers are constantly employed between this place and Liverpool, conveying an average of 15,000 passengers, besides stock and merchandise, all of which will pass along this line, some idea may be formed of the prosperous results which must attend the undertaking; and as railway intercourse will be long opened up from the town of Newry to the port of Sligo, the proposed Newry and Warrenpoint Railway will complete the chain of direct communication from London by Liverpool to the west coast, and add another powerful argument to those already existing for making Warrenpoint the mail packet station for the north and west of Ireland, to which this undertaking will become one of national interest.

By the Report of the Railway Commissioners of 1838, the passenger traffic on the road through which the intended line will pass will be found to exceed that of any other line in Ireland, save only the Dublin and Kildare, and as will appear on reference to the traffic map compiled by them, and the tables attached thereto. Some idea of this traffic may be formed from the number of public conveyances plying between Newry and Warrenpoint, from returns taken with great accuracy during the last month, by which it appears that sixty public cars, carrying usually four persons each, run daily between those towns. This calculation is, however, far below the average, as, during the summer months, the traffic to Warrenpoint and Rosstrevor is greatly increased.

Present traffic between Newry and Warrenpoint, sixty cars daily, making two journeys each way, and carrying four persons each journey, 350,000 passengers, 6d. each £3750
Merchandise traffic by two steamers, of 400 tons each, plying to and from Liverpool and Warrenpoint, making two trips each way weekly, and carrying several tons of goods each trip, or nearly 31,200 tons annually, at 2s. 6d. per ton 3900
Live stock, &c. 840

Deduct one-third for working expenses of the line £13,200

Showing a surplus revenue of £8900

Thus showing to the shareholders a return of more than 11 per cent. on the full amount of the capital on the present existing traffic. According to the mode of calculation adopted by the Commissioners in their Report (part iii., p. 109), the number of private conveyances is found to be considerably greater than that of those used by the public, so that even taking the numbers as equal, the present yearly passenger traffic amounts to 700,000. This traffic, in case the proposed line were carried out, would, according to Parliamentary calculation, amount to 2,102,400, which, with one or two exceptions, cannot be surpassed either in England or Ireland.

A portion of the shares will be reserved for parties having a local interest. The managing committee reserve to themselves the power to make such deviations or alterations from the proposed line, and to enter into such arrangements and agreements with other committees, companies, or individuals, as they may deem necessary or expedient, or for the benefit of the shareholders, or of the undertaking. All necessary arrangements will be made for going before Parliament early next session.

Prospectuses, with forms of applications for shares, may be had at the offices of the company, No. 41, Charing-cross; of the solicitors, Messrs. Edwards, Mason, and Edwards, Delahay-street, Westminster; and of Messrs. Mullens and Marshall, stock and sharebrokers, Lombard street, London; Messrs. Bruce and Symes, stock and sharebrokers, Dublin.

RAILWAY LEGISLATION.—(From a Correspondent).—The fact is established, that the committees of the House of Commons are inadequate to dispatch the railway business before them. This being the case, the question

not unnaturally suggests itself, whether it would not be advisable to have some other body, of sufficient intelligence and, untrammelled by senatorial duties, selected for this department. Without any disposition to dogmatise, I think that this is the only course to be adopted. If the question were one of an individual, little doubt could exist as to the method of proceeding. If a person were unable to perform all his business, he would, of course, call in assistance, or, if he were acting in a delegated capacity, his employers would do so. This is essentially the position in which the House of Commons stand, with respect to railway projects. Why, then, cannot the evil be reached in the same way? The body, of which I speak, might be appointed by the House of Commons, and vested with the necessary powers, and little difficulty would be experienced, in procuring a set of men, quite as well qualified for the task as the honourable Members of the House of Commons. Of course, such a body should be paid, and by the parties who would derive immediate benefit from their exertions—namely, the projectors of the railways. This, perhaps, would not meet the views of all railway speculators; but those who were really honest would, if I mistake not, find it more to their advantage to pay a certain sum, and have their business expedited, than to drag through the present tardy process of House Committees, where the expenses are uncertain in all cases, and ruinous in many, and the means which generate wealth, time, and industry, are so profitably expended. Of course, to this, as well as to every other proposition, not self-evident, objections will be raised. But every one must admit, that the evil, for which a remedy is here suggested, is not undeserving of public attention. It is also a *sequitur*, that he who points to a diseased part of the state, social or political, and proffers a nostrum, is, at least, deserving of some praise, and may render service to the cause he undertakes to advocate. These considerations have induced me to trespass on your valuable space.

SOUTH LONDON SUBURBAN RAILWAY.

OFFICES, 48, MOORGATE STREET, LONDON.

NOTICE.—In consequence of the continued and frequent demands for prospectuses and forms of applications for shares in this company, the directors beg to state that it will be impossible to entertain such applications, as the public have had due notice of the share list closing on Saturday, the 24th of May last. The necessary inquiries as to the respectability of the applicants are now in progress, and the allotment letter will be issued as soon as the company are satisfied as to the validity of such applications, and the responsibility of the parties.

CHESTER, WHITCHURCH, WEM, AND SHREWSBURY RAILWAY.

Capital £500,000, in 20,000 shares, of £25 each.—Deposit £1 7s. 6d. per share.

PROVISIONALLY REGISTERED.

The object of this railway is to connect Liverpool, Birkenhead, and Chester with South Wales and the west of England, forming a junction at Chester with the Chester and Birkenhead and the Chester and Holyhead Railways, and also at Whitchurch, forming a junction with the Trent Valley Continuation and the Manchester and Birmingham Continuation Railways, and thence continue its course through Wem and Shrewsbury, there forming a junction with the Hereford and South Wales and West of England Railways, being the direct route to Bristol.

Full particulars and names of the provisional committee will be published in a few days; in the mean time applications for shares may be addressed to the company's solicitors, Messrs. Vincent and Sherwood, Temple, London; and Messrs. Harper and Parry Jones, Whitchurch, Salop.

BIDEFORD AND TAVISTOCK RAILWAY, WITH

BRANCHES TO BARNSTAPLE AND CREDITON.

(Registered provisionally, pursuant to Act 7th and 8th Victoria, cap. 110.)

Capital £50,000, in 25,000 shares, of £20 each.—Deposit £1 7s. 6d. per share.

COMMITTEE OF MANAGEMENT.

Joseph Brown, Esq., Director of the Manchester and Birmingham Continuation and Welsh Junction Railway.

John Churchill, Esq., Director of the Trent Valley Continuation and Holyhead Junction Railway.

Major Morse Cooper, Wargrave, Henley-on-Thames.

Captain Robert Douglas, R.A., Senior United Service Club.

Captain Fisher, Junior United Service Club, London, Director of the Manchester and Birmingham Continuation and Welsh Junction Railway.

Frederick James Hall, Esq., Torrington-square and Lincoln's Inn.

Sweeney Jervil, Esq., Chairman of the Diss, Beccles and Yarmouth Railway, and Director of the Armagh and Coleraine Railway.

Thomas Kelly, Esq., Alderman of the City of London.

Stephen Lewis, Esq., Director of the South Wales Railway.

Thomas Hammond Tooke, Esq., Blackheath.

John Wheelton, Esq., late Sheriff of London and Middlesex, Director of the Barnstaple and Taft Vale Railway.

(With power to add to their number.)

BANKERS.

London.—The London and County Joint-Stock Bank; and Messrs. Rogers, Olding, and Co., Clement's-lane.

Bideford and Torrington.—The National Provincial Bank of England; and the Agricultural and Commercial Bank.

Barnstaple.—The West of England Bank.

Okehampton.—The National Provincial Bank of England.

Tavistock.—Messrs. Gill and Rundle; and the Devon and Cornwall Banking Co.

Consulting Engineer.—Sir John Macneil, LL.D., F.R.S., M.I.C.E.

Messrs. Rice and Thomas Hopkins, Members of the Institution of Civil Engineers.

Solicitor.—Hull Trill, Esq., 30, Basinghall street, London.

LOCAL AGENTS.

James Rooker, Esq., Bideford; Messrs. Burt and Son, Okehampton; Henry Hawkes, Esq., Okehampton; Messrs. Bridgman and Scobell, Tavistock.

Secretary pro tem.—Charles Goodwin Bateman, Esq.

The objects of this undertaking are to unite the Bristol with the English Channel, and to afford a direct, speedy, and cheap communication between the three centres of population in Devonshire—viz., of Bideford and Barnstaple, with their neighbourhood, containing 40,000 inhabitants, on the north; of Plymouth and Devonport, including in their environs, 100,000 people, on the south; and of Exeter, with its suburbs numbering 50,000 residents, on the east; and to supply to the inhabitants of the districts through which the lines of railway will pass the advantages of nature, coal, and general merchandise, at an immense reduction of cost, and the best markets. The railway is intended to commence at the town and port of Bideford, and to proceed by the town of Okehampton to the borough of Tavistock, where it is to communicate with the branch of the South Devon Railway, which is to be made from Plymouth, and for which a Bill is now before Parliament. A branch will connect the populous and flourishing borough of Barnstaple with the main line, and another branch will pass from the main line through Bow, and join the Exeter and Crediton Line at Crediton. The length of the main line will be about forty-two miles, and of the branches about twenty-three miles—making together sixty-five miles. Estimates of the traffic have been prepared by competent parties, and the result is, that, after allowing a deduction of 40 per cent. for the working expenses, the net returns are calculated to amount to more than 6 per cent. per annum on the required capital, without taking into account several future sources of income which the railway will create.

The great importance of this railway to the landholders and general population in the central parts of the county through which the line will pass, will appear from the fact, that the price of land will be reduced to them 40 per cent., and of coal 10 per cent. The local population which would be benefited by the construction of this railway exceeds 300,000 persons.

The country through which this line of railway will pass is peculiarly eligible in an engineering point of view for its construction.

The landowners on the line are extremely favourable to the project and are anxious to have a railway communication opened, which is calculated so materially to benefit their estates—many of them have signified their intentions of becoming shareholders in this company. In the allotment of the shares preference will, of course, be given to parties who have a local interest in the undertaking.

Power is intended to be reserved in the Act of Parliament, which is to be obtained for making this railway, to allow interest on the deposits and calls paid on the shares, at the rate of 4 per cent. per annum, until the opening of the whole line. No subscriber will be liable beyond the amount of his shares.

This being a county line, it has been resolved that not less than 6000 shares of the company should be distributed amongst the applicants who are shareholders of the following lines—viz., the Bristol and Exeter, 2500; the South Devon, 2500; the Exeter and Crediton, 750; and the Barnstaple and Taft Vale, 250.

The proprietors in the above lines wishing for shares in the Bideford and Tavistock Railway, must produce their shares, or scrip certificates, to the solicitor in London at the time of making application for shares, or send to him, along with the letter of application, the certificate of some respectable solicitor that the applicant is a holder of the shares on which he founds his application, which certificate will state the number of the shares or scrip certificates held.

The amount of shares already applied for having nearly exceeded three times the number which the committee will have to allot to the public, the time within which applications for shares may be made will shortly be limited. The prospectus and the form of application for shares may be obtained from the solicitor, local agents, or secretary.

Applications for shares to be forwarded to the solicitor, 30, Basinghall-street, London.

FORM OF APPLICATION FOR SHARES.

To the Provisional Committee of the Bideford and Tavistock Railway Company. Gentlemen,—I request that you will allot to me shares in the above company; and I hereby undertake to accept the same, or such less number as may be allotted to me, and to pay the deposit thereon; and also to execute the Parliamentary contract and subscribers' agreement, when called upon so to do.

Dated this day of 1845.

Name (in full)

PLAN FOR CHEAPENING THE SUPPLY OF GAS

TO THE EDITOR OF THE MINING JOURNAL.

Sir,—In the Supplement to your valuable Journal of the 15th March, is a letter from Mr. John Blofeld, containing a plan "for cheapening the supply of gas to the metropolis, and other principal cities and towns." You cannot, Sir, be aware that Mr. Blofeld has previously submitted this scheme to your able contemporary, the Editor of the *Mechanics Magazine*, or that it had immediately received the enclosed confutation of its practicability, and with which you will, no doubt, agree, by giving it insertion in your Journal. Mr. Blofeld has, however, not condescended to notice this reply to him, nor has any writer—save, indeed, the Editor himself—appeared to take any notice of the subject either way; notwithstanding, it appears to me one of considerable moment, and involving some science, mathematical calculation, and practical acquirements.

London, April 22.

C. G. E.

Sir,—In your last week's Number is a plan, by Mr. John Blofeld, for supplying London with gas at a much cheaper rate than at present, by means of works to be erected at one or other of the following coal-fields—viz., Staffordshire, Derbyshire, Nottinghamshire, Lancashire, Yorkshire, Newcastle (the best locality, he says), or Bristol; the gas to be conveyed along the line of the railways. Mr. B. further says, that he offered this plan, some ten years ago, to a company formed for the purpose of purchasing original inventions. He then goes on to state in detail the particulars of his plan—which, by-the-bye, includes the supply of all the towns and places on the route—and ends by enumerating the several sources of the great saving it would create in the conveyance of the coal; in the supercession of the eighteen gas-works in London, as well as all those on the road. One manufactory, he says, would be sufficient to take the place of all. His statistics are, however, more than ten years old, and are now, from the enormous increase, quite obsolete. Mr. Blofeld does not tell us, why the company for purchasing "original inventions" did not avail itself of his suggestions; nor is he probably aware that such a scheme was propounded now nearly twenty years ago, and a company attempted to be formed to carry it out. The absurdity of such a scheme was, however, shown then, and its reiteration now is really monstrous from the greater experience acquired. Can Mr. Blofeld have any, even the most remote, idea of the quantity of gas that London alone would require to be brought to it, for one night's consumption in the depth of winter? Or of the size or capacity of the pipe that would be requisite to convey the quantity (if it ever could be conveyed), or the cost of such a pipe? Sir, I am sure he can have none, as the following statements will show. By a computation, and which will be found pretty near the truth, there is consumed in London in the longest night (and day) 12,000,000 of cubic feet; this quantity would necessarily have to be conveyed from whatever distance to the capital during the twenty-four hours, or at the rate of 500,000 cubic feet per hour; and this is present consumption only, not allowing for the extraordinary increase of demand daily occurring. Now, Sir, to be safe, I will take as necessary to be provided and conveyed 700,000 cubic feet per hour, and which, by calculation, I find, to bring it only one hundred miles—whereas, many of the places he enumerates are more than two hundred miles distant—will require a pipe of the following dimensions:—at half-inch pressure, a 30 feet pipe will deliver 701,083 cubic feet; but at 2 inch pressure—and the greater the pressure, the greater the loss—a 30 feet pipe will deliver 623,186 cubic feet; and taking this quantity to be sufficient, let us see what the cost would be. A mile of pipe, 20 feet diameter, would weigh 6600 tons, and cost, for metal and putting together, at least 528,000*l.* or for the 100 miles, 52,800,000*l.* without land or protection of any kind! Surely, Sir, Mr. Blofeld cannot be in earnest. How, also, is such a pipe to be got through the tunnels, or where is room to be found for it on the roads? But it may be said, that mechanical power may be used, and thus materially lessen the size; but this would only increase the difficulty, and annihilate every chance of supplying cheaply. The whole thing, Sir, is absurd; so much so, indeed, as scarcely to require pointing out, or to have deserved the trouble of this refutation. Having now done this, and with the hope of making this paper a little useful, I will state a rather curious calculation on the subject of gas, relating to its measure and cost. I read some short time since, in a provincial paper, the following—half-a-pint of ale equal to a yard of land. It is not often, we dare say, that a man thinks, when he drinks a gill of ale, he is swallowing a square yard of land! Yet so it is. There are 31,700,000 acres of land in England, the rental of which is 30,000,000*l.* or 19*s.* 2*d.* per acre: an acre, therefore, at twenty-five years' purchase, is of the value of 23*l.* 19*s.* 2*d.*, or 5750 pence. Divide this by 4840 (the number of square yards in an acre), and you have a penny and a fifth as the average value of a square yard of English ground.

It occurred to me, whilst my servant was gone for a glass of ale for my dinner, learning that the beer (half-a-pint) cost 2*d.*, to make the comparison between the selling price of beer and gas; and the following, extraordinary as it may appear, is the result:—Price of ale per quart, 8*d.*; price of gas per 1000 cubic feet, 7*s.* In 1000 cubic feet there are upwards of 6000 gallons, or 24,000 quarts, which, at 8*d.* the quart, the price of ale, is per 1000 cubic feet, 800*l.*; and placing gas in juxtaposition with ale, you have of gas upwards of 6000 gallons for 7*s.*, costing in ale 800*l.*, or more than 2400 quarts of gas for the price of one quart of ale! Astonishing and astonishing as this may appear, it is, nevertheless, quite true. Yet, notwithstanding this extraordinary fact of comparative cheapness, the still more extraordinary one exists, of complaints being made against the accuracy of the measure used for the cheaper commodity—a measure mechanically perfect and unerring; whilst none are made against the dearer one, notwithstanding its palpable uncertainty and irregularity, and almost impossibility of being accurate.

M. KNELLER'S PROCESS FOR PURIFYING ZINC.—This process for purifying zinc consists in the employment of lead when in the state of fusion. The zinc thus purified can be immediately combined with copper or other metals, in forming amalgams of a degree of purity, which renders them far more adapted for application to industry and arts. The mode of operation is by taking equal quantities of zinc and lead, and melting them together in a crucible. When the two metals are in a perfect state of fusion, they should be scudulously stirred; and the impurities which rise to the surface removed. Pulverised charcoal of wood should be thrown on the mass to counteract the oxidation, and the metals then left in this state for about three hours. At the expiration of this time the lead will have fallen to the bottom of the crucible, leaving the purified zinc floating on the surface. In this state the carbon, and other impurities which cover the surface, can be removed, and the zinc drawn off by a pipe communicating with the crucible. M. Kneller generally adopts, in his operation, crucibles similar to those used in the fusion of about 700 kil. of lead, but a little deeper, and he supplies them with 350 kil. of each metal. When it is required to combine a small quantity of zinc with lead, so as to form an amalgam, the metals are to be left at rest for three hours as before; but at the end of an hour the greater proportion of the zinc must be drawn off, leaving only on the lead's layer of about 25 to 30 millimetres, which, as soon as it hardens, is taken off, and the lead which remains will be found combined with zinc. The zinc which has been removed contains also a certain quantity of lead, which can be separated by the same simple process of fusion and repose. To form an amalgam of copper and other metals, the alliance can be procured with the zinc, which has been first properly purified, as completely and successfully as with lead.

WATER COLOURS, AS APPLIED TO MECHANICAL DRAWINGS AND MINING SURVEYS OR PLANS.—One of the principal features, or objects, in mechanical drawings, or plans and sections of mines, is the permanence of colour, as well as forcibly throwing out the shades, and giving the roundness to a shaft or wheel, whilst, at the same time, the edges or angles are clearly depicted, which, with surface or underground surveys, the minute requires not only clear pencilling, but vividness, with depth and transparency of colouring. Although with some of the best water colours, this has been, if not fully realised, at least very closely approached, yet we find that time has the effect of changing the tints, destroying the harmony of colouring, and, with the lighter shades, almost obliterating the touch of the pencil. Our attention has been drawn to the subject, by the introduction of a novel description of water colours, manufactured by Messrs. Reeves and Sons, of Chesapeake (whose water colours we have recognised from our school-boy days), wax being introduced in their preparation, in lieu of gum, and thus giving an effect which we could hardly have contemplated, and nearer approaching oil colours; while they are far superior for covering a surface, the lightest tints displaying an evenness and firmness, to which we have been unused. The price is the same as the ordinary water colours, and we cannot doubt but that they will come into general use.

LIKE-PRESERVING COAT.—Among the numerous experiments which are daily exhibited at the Royal Polytechnic Institution, by the divers in the basin in which the diving-bell is used, we noticed a coat, which has the advantage of being a life-preserver. This coat is, certainly, a very happy idea, as a man wearing it runs no risk of being drowned by the upsetting of a boat, or having the misfortune of falling through the ice while skating, which too frequently happens in indulging in this delightful exercise; and for this it proves an immense advantage, for he would not only preserve his own life, but keep afloat several others, until help could be obtained. This coat is not injured in its appearance, as the air-bags are in the body, and are inflated by small blow-pipes, which the wearer can do in an instant, should he find himself suddenly immersed, and can calmly and philosophically await the impending danger, in all the air-tight consciousness of security. These air-bags, we understand, can be fitted to any coat or jacket, without altering the appearance in the slightest degree.

A GLANCE AT CORNISH MINING—No. III.

BY JOSEPH TELFORD WATSON, ESQ.

The management of the different Cornish mines, especially those upon the cost book system,† is intrusted to the "purser," who receives a fixed salary (generally from 2*l.* to 10*l.* per month, according to the extent of the mine upon which he may be engaged), and whose duties are, to keep all the accounts of the mine, convene the meetings of the shareholders, receive calls, pay the dividends, and to order such supplies as are required for the working of the concern. In this latter office there was formerly so much jobbing and collusion between the pursers and the merchants, that one or two of the largest mines are now managed by a committee of shareholders, who contract for the supply of materials by public tender, and under whom the purser becomes a mere agent. Next in office to the purser is the head "captain," who superintends the working of the mine underground and at surface; the former being also under the cognizance of the second, or underground captain. The work of the mine is performed by *tributers* and *tutworkmen*; the former receive a certain portion of the ores they raise, or a certain portion of 1*l.* (according to the richness or poverty of their "pitch") in the value of what they raise; and the latter work by the piece, calculated generally by the fathom; these men drive levels, sink shafts, and do such work as is necessary to be done in parts of the mine which do not yield ores. Besides these, there are labourers, consisting of men and women, boys and girls, employed on the surface, or as it is called "at grass," performing the mysterious processes of cobbing, bucking, jiggering, buddling, and spalling the ores, as they are raised from the mine. In preparing copper ore for the market, the first process is to extract and throw away the rubbish with which the ore is mixed; this is done by little girls. The largest pieces of the ore are then "cobbed," or broken with hammers into smaller pieces; this work is done by women; and, after being again picked, the whole is divided into *prills*, or lumps of ore; *drudge*, or ore, mixed with other substances; and *halvans*, or lumps, which contain but a small quantity of ore. The *prills* are given to "maidens" of from fifteen to sixteen years of age, who "buck" them—that is, break them into pieces of the size of a common marble with a flat hammer, or bucking iron. This portion of the ore is then fit for market. The *drudge*, when containing but little iron pyrites, is bucked to a smaller size than the *prills*, and then jiggered, or placed in a sieve under water, and jolted about either by machinery or by little boys. By this means it is separated into four parts—that which passes through the sieve, and is usually fit for sale; 2*d.*, the portion at the bottom of the sieve, called *raggings*; the middle parts of the contents of the sieve, which is again bucked and jiggered; and that at the top of the sieve, which is put away among the halvans, or refuse. Some of the ores of copper are so soft that exposure to water would occasion loss, in which case they are fit for the market after being sifted, cobbed, and picked. The halvans, or refuse from the preparation of the crop, when not much mixed with iron pyrites, are bucked and jiggered, but when mixed with foreign substances of great specific gravity they are cobbed and picked. The ores, after being dressed, are put into heaps of several tons each, and well mixed; and a party called a *sampler* takes a portion from each heap, which is carried to the different assay offices, where the ore is pulverised, and an ounce troy assayed in a crucible, and a bead, or *prill* of copper, is found among the scoria. If an ounce of ore yield one dw. of copper, the produce of that ore will be 1 in 20, or 5 per cent., and so on; and this determines the amount per ton to be bid for the ore at the ticketing or sale, which takes place a fortnight after the sampling. Nothing in Cornwall can be done properly without a dinner; therefore, at these ticketings, feasting is the order of the day, and the chair is taken by the manager of the mine having the largest parcel of ore for sale. Before dinner, tickets containing offers from the different copper companies for the several parcels of ore, founded on the assays, are produced and the highest declared to be the purchaser. The standard of copper is a term given by the smelter as the price of a ton of metal in the ore, from which standard he deducts 2*l.* 15*s.* for every ton of ore, or as many as may be required, according to its produce, to yield a ton of copper; and which sum is considered by the smelter equal to the expense of reducing the ore to a marketable state. This, as it is called, "returning charge," is the same for poor as for rich ores; but as it costs more to convert a ton of rich ore than a ton of poor, the standard varies with the produce, so as to equalise the matter. Poor ores fetch a high standard, and rich ores a low one, because, in the former case, the returning charge more than covers the cost, and in the latter is not equal to it. That which in Cornwall is called the "produce," and which puzzles the London miners in the weekly sales, is the quantity of fine copper contained in 100 parts of ore; and the standard no more nor less than the price per ton of that copper in the ore, after deducting the returning charge. This standard is regulated by the price that fine copper bears in the market. Supposing the produce of a parcel of ore to be 10 per cent., and the price at which it was sold to the smelter to be 8*l.* 18*s.*, the standard will be thus found:—10 tons of the ore will be required to yield one ton of copper; therefore, 8*l.* 18*s.* × 10 = 89*l.* will be the value of the ore containing a ton of metal; then, multiply the returning charge of 2*l.* 15*s.* by 10, making 27*l.* 10*s.*, which, added to the former, gives the standard of the parcel 116*l.* 10*s.* Perhaps there is nothing connected with mining so difficult to understand, by practical as well as by theoretical miners, as the operation of the standard, which is generally considered as a mystification of the smelter; and we have never yet found a Cornishman who could render it thoroughly intelligible. To the London miner the ticketing paper has more charms than the share list, and it becomes amusing to see the eagerness of parties every Saturday morning to calculate whether the standard be up or down, having some confused notion that a high standard is a sign of prosperity, and *vice versa*; and which, so far, is perfectly correct, for, when a mine is worked at a cost of 4000*l.* a month, and returns only a certain quantity of ore, it becomes a matter of serious importance whether they get 4*l.* and 5*l.* per ton for it. Small mines, worked at little cost, the standard does not so much affect. It will be seen that the system of working mines in Cornwall is well organised; and it is only an act of justice to those engaged in the management of them to add, carried out with considerable skill and ability. In many cases every information is freely and readily afforded to inquirers, though in others, we regret to say, there is far too much secrecy observed; this applies more particularly to mines under the management of parties holding a large interest in the adventure, and who seem to forget that others holding only a small share are equally as entitled to information as themselves. Some of the mines in Cornwall have become rich with very little outlay upon them, and when such great results were scarcely looked for; whilst others early showing great promise have not become profitable after having upwards of 100,000*l.* expended upon them; thereby verifying the remark of Shakespeare, "of expectation fills, and most of all, where most it promises." The East Pool Mine, in Camborne, upon an outlay of 640*l.* has yielded copper ore, since 1834, amounting to more than 140,000*l.*, and a profit of 30,000*l.*; this was done in a very short time, and at shallow levels; but the mine is now, though comparatively in its infancy, very poor. Treavean Mine, one of the largest in Cornwall, cost the proprietors originally 19,000*l.*, and has yielded, since 1814, 1,200,000*l.*

† Revised by the author for the *Mining Journal*, from the *Railway Register*.

In consequence of mines on the "cost book system" having been exempted from the operation of the Joint-Stock Registration Bill, there has been of late much discussion as to what the cost book system really is; and it may be as well to state here what is generally understood by it by miners. Under the cost book system, the names and addresses of all the shareholders, with the number of shares held by each, are entered in a book, in which the cost incurred in working the mine, and the transfers of shares from one holder to another are also inserted; the former being made up every two months, and the latter entered as they are made. The rules and regulations for the government of the company, and which are considered binding on the shareholders, are also entered in the cost book; and each shareholder is individually liable for the amount of debts due upon the mine, but has the privilege, at any account meeting, of paying his proportion of the debts, and then "signing off" his name, as it is termed, from the cost book, as no longer a shareholder, and consequently not subject to any liabilities incurred after the date of his "signing off." At the account meetings, and, indeed, in all matters affecting the management or working of the mine, the majority of shares prevails.

‡ Mr. Henwood in *Transactions of Geological Society of Cornwall*.

§ To show the great advances in mining, the following curious extract from a communication made to the Royal Society in 1671, will be interesting to the miner:—"When we have found one lode, the last easy hatch (consuming pit) exchanges its name for that of a *lin-shaft*, or *lin-batch*, which we sink down about a fathom, and then leave a little, long, square place termed a *chamber*, and so continue sinking from east to east (that is, as high as a man can conveniently throw up the ore with a shovel) till we find either the lode to grow small, or degenerate into some kind of wood, or mud, or moss, &c. Then we begin to drive east and west, as the goodness of the lode, or the convenience of the hill invite, which we turn a drift, three feet over, and seven feet high; but in case the road be not broad enough of itself, then we usually break down the *deads*, first on the north side of the lode, for the greater convenience of the right axis in working, and then we begin to rip the lode itself. The *bedde-men* rip the *deads* and ore, the *shovel-men* carry it off, and land it by casting it up with shovels, from one chamber to another, unless it be when we have a winter with two keebles (great buckets made like a barrel, with iron hoops placed just over the *wind-hatch*), which, as one comes up, the other goes down. When we are come to any depth, and find the water *sinking* us, we descend to the bottom of the hill, when we have that convenience; and at the lowest place begin a little drift on a level, till we come up to our work, but when we once pass that level in which our *croft* runs, and the water begins to trouble us, we have this remedy—either with *winder* and keebles, or leather bags, pumps, or buckets, to get it up to the *adit* level, and so we are forced to do to the very top, when we have not the convenience of an *adit*."—*Philos. Trans.*, vol. vi., p. 2097.

and a profit to the shareholders of 445,000*l.* The mine gives employment to 1200 individuals, and has a shaft 1800 feet deep from the surface, and which took two years and seven months to sink; by twelve sets of men rising, and twelve sets sinking, in all 120 men at the same time employed; the shaft is twelve feet by six, and cost upwards of 20,000*l.* Upon it there is one of the finest steam-engines in Cornwall, with a cylinder of eighty-six inches in diameter, which works nine lifts of pumps, and lifts 36 tons 6 cwt. per stroke: the weight of the engine when in motion is 353 tons 16 cwt., and it cost 4185*l.* There is also in this mine a machine for raising and lowering the miners, invented by Captain Loam. It is formed of two perpendicular rods of wood, having projections about twelve feet apart, upon which each man, ascending or descending, stands. In these rods are placed long iron handles, which the men lay hold of; as one rod descends the other ascends; and at every alternate step there is a slight check, which gives sufficient time for the person travelling to remove from one rod to another. The movement of these rods enables a man to travel about eleven fathoms a minute. The machine is worked by a thirty-six inch cylinder engine acting upon two small wheels, which act upon two large ones. When it is considered that in many mines the workmen have to descend to the depth of 200 and 300 fathoms by ladders, work underground six hours, and then climb the ladders to the surface, the importance of Captain Loam's invention will at once be seen; and we are only sorry that it is too expensive to be adopted in smaller mines. We understand, however, the United Mines Company have it in contemplation to adopt it. These mines employ 1500 persons, are of great extent, and doing well, though they have been very speculative. In the first working they yielded a profit of nearly 300,000*l.*, and then made a loss of 50,000*l.*, and stopped. Again resumed, 30,000*l.* were lost upon them. Since 1840, however, the management has been in the hands of Mr. John Taylor, and the mines have paid good dividends. The Tincroft Mines in conjunction with Carn Brea are said to have left a profit at different workings of upwards of a million; the former commenced working in 1784. The present company of proprietors have worked the mine since 1833, and upon an outlay of 42,000*l.* have made a profit of about 12,000*l.* The Carn Brea, 110,000*l.* profit since 1834. These mines are under London management, and not what are termed "merchant's mines," that is, where merchants, or a particular firm, holding a large interest in the mine, have the management, and supply it with the materials, sometimes amounting to 4000*l.* a year and more, and getting a good profit upon that supply, work the mine seemingly oblivious of the other less fortunate shareholders, who would perchance prefer dividends, to repeated calls upon their pockets, to lay out levels, and make reserves of ores for future generations. Unfortunately there are too many mines of this class, and we may have to refer to them hereafter.

[To be continued in next week's Mining Journal.]

MINING IN AMERICA.

Our recent communications from America have been more than usually ample in relating mineral discoveries—proving that mining is, indeed (as one of our correspondents writes), "going a-head" in the United States; in reference to which, the New York *Saturday Courier* says:—"It would be impossible to estimate the vast mineral wealth of our country; almost every day presents us with some new discovery of great importance. To mention here but a single region, some faint idea may be had of the rich resources of Wisconsin. It is stated that the lead region occupies sixty counties, of six miles square; the unexplored district north of the Wisconsin river, not included in what is now called the mineral district, contains lead mines of great value. The copper region begins on the southern shore of Lake Superior, and extends, in a south-westerly direction, to the Mississippi river, or to the present lead region. Copper has also been found in the country above the Kickapoo river. Twelve miles from Prairie du Chien, and six miles from the Mississippi, a copper mine has been discovered, the ore of which will yield about 12 per cent., being about 7 per cent. better than that found at Mineral Point. Another copper mine has been discovered, which is very rich and extensive, on the Kickapoo, forty-five miles north-east from Prairie du Chien. Iron ore of superior quality has been found on Black river, which empties into the Mississippi, about sixty miles below the Chippewa river. The cave at Dubuque, discovered some time since, is estimated to be worth several hundred thousand dollars, and to contain 3,000,000 lbs. of lead. From those sources of mineral wealth with which we are already acquainted, and from the reasonable presumption in favour of other discoveries, Wisconsin may be considered one of the richest mineral regions in the world."—In addition to the information published in last week's *Mining Journal*, we have now to add the following:—

PENNSYLVANIA.—When we reflect on the great mineral wealth of this state, there is ample reason for cheerfulness. Out of fifty counties of Pennsylvania, no less than thirty have coal and iron in them; and out of the 46,000 square miles of Pennsylvania, which form superfluous, there are 10,000 miles of coal and iron—while all Great Britain and Ireland have only 2000, so that Pennsylvania alone has an area of coal and iron five times as great as that of Great Britain.

MINERAL RESOURCES OF ALABAMA.—In Randolph county there are five large mines of silver and gold, and several minor ones, which produce annually about \$125,000, and afford employment to 300 or 600 persons. Tallapoosa county is also rich in gold and silver mines; Goldville is supported by one mine. Gold has also been found in Coosa, Talladega, and Chambers Counties. In Randolph there is an inexhaustible bed of iron ore, which does not lose 15 per cent. in melting; nitre, coal, salt, and lead ore, are found in other counties.

GOLD MINE.—Gold has been found in almost virgin purity on the margin of a small lake in the wilderness, in the vicinity of Sherbrooke, L.C., but to great is the difficulty in obtaining it, that, as yet, the quantity is very limited. It is found projecting from the under side of a shelving rock of a mountain. It is so situated that it cannot be reached from below by ladders, nor from above by ropes; and the only specimens obtained were brought down by rifle shots.

GREAT DISCOVERY OF COPPER.—A mine of copper has been discovered near Fort Wilkins, Copper Harbour, Lake Superior, which is supposed to be richer than any other in the United States. At the surface it is about twenty inches wide, spreading out as it deepens, and it is supposed to be at least three miles in length. Specimens of the ore have been raised, which warrant the belief that the mine averages 75 per cent. pure copper. Particles of silver and gold have been found intermixed with the copper, and it is calculated that the mine will easily yield 86,000,000 annually. Our information is from such a source that we cannot doubt its correctness.—*Republician*.

BERKS.—In Alsace township, Berks county, about five miles from Reading, a large body of magnetic iron ore has been discovered. It is found in great abundance, immediately under the surface, and is said to be very rich, having been tried at Mr. Burkhardt's forge, and proven to be of very superior quality.

IRON ORE.—Large beds of iron ore have lately been discovered in Schuylkill county, Pa., and capitalists have adopted measures to avail themselves of the advantages thus opened to them.

ILLINOIS LEAD REGION.—A gentleman at St. Louis, from Galena, reports that the miners had been unusually successful in raising mineral during the winter, and that there was a very large amount of lead on the landing at Galena ready for shipment.

MIXING IN ULSTER.—At a time, when the resources of Ireland are attracting more than ordinary notice, we feel much pleasure in directing public attention to the lead mines of Coolstra, in the county of Monaghan, the property of E. W. Bond, Esq., of Bondville. These valuable and extensive mines, which are situated about four miles from Castleblayney, and an equal distance from Keady, have been leased to an English company, and for some years have yielded considerable quantities of rich lead ore. The indications of metallic wealth have recently become so conspicuous, as to induce the enterprising proprietors to erect a steam-engine for the more effectual drainage of the works. The engine is now in full operation, and the results, we have been assured, are such as to afford the most cheering prospects of successful enterprise, and of ample remuneration for the investment of capital—rich veins of ore having been discovered, the products of which are in course of being brought to market. On visiting the works, the attention of the spectator is at once arrested by a scene of bustling animation and active industry, well calculated to elevate the hopes, and gratify the heart of every lover of his country. To the tenants on the estate and the surrounding neighbourhood, the amount of benefit derived from increased employment, with all its concomitant blessings, is even at the present moment, considerable; whilst the prospective advantages can hardly be over-rated. At present we are informed the average payment of wages is about 200*l.* per month. The whole works are placed under the management of Mr. Skimming, an active and intelligent person, who has had much experience in some of the largest English mines, and his opinion, we are happy to learn, is that the district in question abounds in mineral wealth. Under such superintendence we doubt not that ample success will reward the efforts of the company, and a stimulus be thus given to the further investment of English capital in the country. *Incurios suarum* has long been the reproach of Ireland in regard to her literary relics, and the same may be applied to the still undeveloped resources, with which her soil is teeming. But a new race of improvement has begun, and the industrial capabilities of our land are at once encouraging to the capitalist and cheering to the patriot. We, therefore, wish all prosperity to the undertaking, of which we have given an outline, confident that it will prove alike beneficial to the district at large, and to the spirited lord of the soil, Mr. Bond.—*Newry Telegraph*.

NEW IRON WORKS.—It is now past doubt that several blast-furnaces are about to be erected near Cethin, about two miles below Merthyr. The site was fixed upon by the spirited proprietor, W. Crawshaw, Esq., just before he left the neighbourhood for Caversham. It has just been cleared and prepared for laying the foundations of the proposed erections.—*Newcastle Journal*.

In making shafts, one set of men sink, or work downwards, and where the lower levels admit of it, another set of men work upwards, or rise from a lower level to meet those coming down.

Mining Correspondence.

ENGLISH MINES.

EAST WHEAL CROFTY MINING COMPANY.

May 22.—An account held on the mine of profit and loss for March & April: Cost for March and April, 1843, £4292 3 6. Ores sold March 6th, after dues, £2016 19 6. Ditto April 3, £4319 4 3. Debits received, £415 2 3. Discounts on bills, £310 4 4. Balance in hand in February, 1843, £20714 14s. 9d.; to which add balance in hand in February, 1843, £1277 16s.—making a total of £51994 10s. 9d.; from which deduct 18800 for a dividend, leaves a balance now in hand of £33194 10s. 9d.—Nearly 10000l. was included in the above cost for a cargo of timber taken into stock, which will be sufficient until autumn, and which, of course, will lessen considerably the future amount of "merchants' bills."

HOLMBUSH MINING COMPANY.

May 27.—In the 120 fathom level, west of cross-cut, the lode is nine inches wide, and worth 5l. per fathom; in the south cross-cut the ground is rather hard for driving. In the 110 fathom level, west of Hitchins's shaft, the lode is two feet wide, and worth 44l. per fathom; in the stopes, in the back of this level, east and west of Mitchell's winze, the lode is one foot wide, and worth 15l. per fathom; in the stopes, west of Goldsworthy's winze, the lode is one foot wide, and worth 9l. per fathom; in the stopes, east and west of Lobbs's winze, the lode is fourteen inches wide, and worth 16l. per fathom; in the stopes, west of the pump winze, the lode is eighteen inches wide, and worth 32l. per fathom; in the stopes, west of Hitchins's winze, the lode is twenty inches wide, and worth 40l. per fathom. In the 100 fathom level, west of Hitchins's shaft, the lode is one foot wide, and worth 8l. per fathom; in the stopes, in the back of this level, the lode is one foot wide, and worth 12l. per fathom. In the ninety fathom level, west of Hitchins's shaft, the lode is small and poor; in the stopes, in the back of this level, the lode is fourteen inches wide, and worth 18l. per fathom. In the sixty-two fathom level, west of Hitchins's shaft, the lode still continues undisturbed by the cross-course. In Bray's shaft, sinking below this level, the ground is favourable. Our next parcel of ore will be about 190 tons.

CONSOLIDATED TRETOIL MINING COMPANY.

May 26.—The lode in Henwood's shaft, sinking under the sixty fathom level, is fifteen inches wide, composed chiefly of yellow ore and spar, and worth 10l. per fathom. The lode in the sixty fathom level, west of Henwood's shaft, is one foot wide, producing some good ore, and opening tribute ground. The lode in the thirty fathom level, east of Henwood's shaft, is nine inches wide, producing a small quantity of ore. We have got our new engine-shaft to sink by eleven men at 24l. per fathom.

COOK'S KITCHEN MINE.

May 24.—North Tineroff lode, in the seventy fathom level, is five feet wide, composed of spar, munda, and ore; we are now driving on the flookan part, the south being very hard; our object in doing so is to communicate as fast as possible with the eastern shaft, where tributaries are now working about three fathoms below the sixty fathom level, and have a promising pitch. As soon as this is accomplished, we shall be able to work this ground to much greater advantage. Eudey's lode, in the ninety-two fathom level, is three feet wide, still producing good stones of tin; we hope to hole to the new east shaft against our next report. Chapple's lode, in the 170 west, is three feet wide, worth 10l. per fathom. In the stopes east of the cross-cut, the lode is sixteen feet wide, worth 100l. per fathom; ditto west of the cross-cut the lode is fourteen feet wide, worth 90l. per fathom; we are still proceeding with the cross-cut south at the 148, but have not yet cut the lode. In the 140, east of Chapple's shaft, the lode is three feet wide, worth 12l. per fathom. We expect in about a month to cut Dunkin's lode, west of the little cross-course; the ground is still easy. In the cross-cut south from Rogers's shaft, at the twenty-nine fathom level, we have not yet cut the lode. Our prospects on tin still continue to look well; we sold this week 20 tons 5 cwt. 2 qrs. of tin (exclusive of dues), which brought 1001l., and we hope to return a larger quantity next month.

ALEXANDER EUDEY.

BEDFORD UNITED MINING COMPANY.

May 26.—At Wheal Marquis, the lode in the seventy fathom level east is without alteration. The lode in the fifty-eight fathom level east is two and a half feet wide, composed of spar and munda, with stones of ore in places; and in the winze in the bottom of this level the lode is two and a half feet wide, and worth 19l. per fathom. There has been no lode taken down in the forty-seven fathom level west since last report; in the stopes in the bottom of this level east the lode is still worth 16l. per fathom; the lode in the deep adit level is twenty inches wide, composed of spar, munda, and ore. At Ding-Dong the lode in Thomas's engine-shaft is three feet wide, and worth 25l. per fathom for tin. At Wheal Tavistock we expect to complete the pitwork, &c., to the twenty-five fathom level by the end of this week. At Delve's Kitchen we continue clearing the adit shaft.

J. PHILLIPS.

HAWKMOOR MINING COMPANY.

May 26.—I beg to inform you that we put the wheel and machinery to work on Saturday, the 17th instant, and it continues to work exceedingly well. Hitchins's engine-shaft, on the Wheal Tavistock, or north lode, is about 10 fms. 4 ft. from surface, and is being sunk with all possible dispatch by a force of nine men; it is expected that the lode will be met with about five fathoms deeper. The very kindly appearance of the lode in the various easting pits, on an average from eighteen inches to two feet wide, composed of fine gossan, spar, and good stones of ore, justify our entertaining the most sanguine expectations as to the result at a greater depth. The engine-shaft, on the Wheal Marquis, or south lode, is now complete to the water, and we have much pleasure in saying, that this lode at the surface presents equally flattering appearances.

SILVER VALLEY MINING COMPANY.

May 26.—I beg to say that the north adit level is now cleared and secured to the engine-shaft, when we shall commence cutting ground, in order for fixing a house-lift for raising a supply of condensing water. The tradesmen are getting on with the engine-house and the work of the engine as fast as possible.

SAMUEL RICHARDS.

CALLINGTON MINING COMPANY.

May 26.—In the 100 fathom level, north of Johnson's engine shaft, the lode is producing rich work for silver-lead ore; we have also commenced driving south, where the lode is letting out a great deal of water, and good stones of silver-lead ore are to be seen, but shall be able to report more fully next week, as the lode will then be taken down. In the ninety fathom level, driving north, the lode has not been taken down since last report; in the south end the lode is worth 4l. per fathom. In the eighty fathom level north the ground is soft for driving; lode worth 5l. per fathom; in the south end the lode is much disordered at the present time; we have commenced sinking two winzes—one in the bottom of this level, the other from the ninety fathom level; the lode has not been taken down in either of them. At the north mine we are daily expecting to cut the lode at the ninety fathom level. In the eighty fathom level the lode is large, intermixed with silver-lead ore. In the seventy fathom level the lode is worth 7l. per fathom; the counter lode at this is one foot big, producing copper ore. In the forty fathom we are driving through tribute ground. The house for the new winding-engine we expect to roof this week; the boiler and beam for the same are on the mine. April ores (seventy-eight tons) have sold at 19l. 16s. 6d. per ton.

J. T. PHILLIPS.

UNITED HILLS MINING COMPANY.

May 24.—In Williams's shaft there is no alteration. In the eighty fathom level, in the eastern end, the lode is four and a half feet wide, two and a half feet one of average quality; in the western end the lode is three and a half feet wide, poor. In the sixty fathom level east the lode is three and a half feet wide, two and a half feet one of fair quality; west of James's shaft the lode is five feet wide, producing ore throughout; east of Harper's winze the lode is three and a half feet wide, two and a half feet one of good quality, promising. In the seventy fathom level east the lode is three feet wide, not looking so well as last reported; west the lode is three and a half feet wide, fourteen inches on the south ore of fair quality; the lode in the winze is five feet wide, two feet on the north part good ore, improved since last week. In the fifty fathom level the ground is still favourable for driving. At Wheal Sparrow, in the fifty fathom level east, the lode is three feet wide, producing some stones of ore; west the lode is two and a half feet wide, six inches on the south part ore of fair quality. In the forty fathom level east the lode is two and a half feet wide, good ore; west the lode is eighteen inches wide, without any ore. In the thirty fathom level the lode is twenty inches wide, six inches on the north part ore of fair quality.

T. TREVENEN. R. WILLIAMS.

EAST TAMAR CONSOLIDATED MINES.

May 28.—I beg to state to you, that we are getting on very brisk with our surface-work at the East Tamar Mines. The engine-house walls at Whiten will be up next week; the smith's shop is up, and covered in; all the heavy work belonging to the engine is here—boiler, cylinder, bob—all, except the bright-work. The engine-shaft at Whiten is cut down and secured sixteen fathoms. The engine-shaft at Fursill is cut down and secured about twelve fathoms; and the foundation of the engine-house is taking out. We have cleared in the adit level, at Charlotte's, fifty fathoms, and find some arches of ground in the back of the level looking very promising; the level is driven further than we anticipated, and much of the ground taken away, so that it appears the lode must have been very good.

B. ROBINSON.

CORNWALL MINING COMPANY.

May 26.—The eighty-six fathom level, going west of Murray's engine-shaft, continues to pass through (on Chiverton lode) very good lead ground, and the back will set by and by at a low tribute; the eastern end, at this level, is much of the same character as noticed for the last two or three weeks—a promising level; the pitches, working in the back of this level, are turning out well. At the seventy fathom level, on the north lode, the appearances are on the whole improved; in one pitch working there we have sunk through we consider the bar of hard ground, and find a favourable alteration for lead, and in more moderate ground. The last computed thirty-three tons of lead ore is sold at 14l. 16s. 6d. per ton (21 cwt.) dry weight.

RICHARD ROWE.

TINCROFT MINING COMPANY.

May 26.—We have got the water out to the 120 fathom level in the south mine; I hope in a day or two we shall get to the 125, set the plunger-lift in proper working condition, and draw the new lift to surface. Our pitches are already set as deep as the 120. In the north mine, the eighty, seventy, and sixty ends east are looking very well, and so is also the seventy end west; the winze, sinking under the seventy east, is worth about 15l. per fathom; the winze, in bottom of the seventy west, is worth 18l. per fathom. The rise against Willoughby's shaft is worth 20l. per fathom; Willoughby's shaft is also worth 20l. per fathom. At Palmer's, the sixty west on south lode, has very much improved, now worth 8l. per fathom; the end same level west, on north lode, is yielding some ore, and kindly. The lode in Palmer's shaft is producing some ore, and kindly. Other places continue much as for some time past. Our masons are getting on well with the engine-house, and hope to complete it early in next week; we have nearly brought home the engine, and have agreed for new boiler.

WILLIAM PAUL.

TRELEIGH CONSOLS MINING COMPANY.

May 26.—In the seventy fathom level, west of Good Fortune, the lode is about two feet wide, producing some ore, and looking kindly to improve; in the seventy fathom level, east of ditto, the lode is twenty inches wide, rather improved, with stones of ore. In the sixty fathom level, west of ditto, the lode is two and a half feet wide, worth 20l. per fathom; in the sixty fathom level, east of ditto, the lode is about two feet wide, with stones of ore, with a more kindly appearance. In the fifty fathom level, west of Symons's shaft, the lode is three feet wide, worth 12l. per fathom; in the fifty fathom cross-cut north, the ground in the country is stiff. In the forty-four fathom level, west of ditto, the lode is one foot wide, not much mineral; in the winze, sinking below the forty-four fathom level, the lode is three feet wide, worth 10l. per fathom. In the thirty-four fathom level, west of ditto, the lode is twenty inches wide, but little ore. In the twenty fathom level, west of ditto, the lode is one foot wide, unproductive; in the winze below adit, the lode is two feet wide, with some ore. In the fifty fathom level, west of Garden's shaft, the lode is one foot wide, not much mineral. I am happy to inform you that the engine was set to work on Wednesday last, but, from some little alterations, did not work effectually until Friday, at twelve o'clock; she continues to work well, and we hope this evening to fork the water to the seventy fathom level. On Monday we shall commence sinking below the seventy fathom level.

W. SYMONS.

GUNNIS LAKE MINING COMPANY.

May 26.—At Chisworth, I beg to inform you, that we have at last got through the cross-course in the adit level, and are driving south in search of the lode, the which is expected to be cut in a very short time; the end is now advanced east of the adit shaft about fifty-two fathoms, and there is about twelve fathoms more to drive to come in under Bailey's shaft. The engine, boiler-house, and stack, &c., are nearly all complete, and we hope to put the engine to work in about two months from this time.

W. RICHARDS.

WEST WHEAL JEWEL MINING ASSOCIATION.

May 26.—In the 100 fm. level west, on Wheal Jewel lode, the lode is six inches wide, unproductive; in the 100 fathom level east, on ditto, the lode is two feet wide, worth 8l. per fm. In the eighty-five fathom level east, on ditto, the lode has not been taken down in the past week; in the eighty-five fathom level west, on ditto, the lode is nine inches wide, with good stones of ore in the bottom of the end. In the seventy fathom level west, on ditto, the lode is without alteration since our last. The ground in the eighty-five fathom cross-cut north, is also without alteration. In the winze sinking below the forty-two fathom level, on Buckingham's lode, the lode is worth 8l. per fathom. In the thirty fathom level east, on Morecomb's lode, the lode is two and a half feet wide, composed of spar, munda, and spots of ore. In Wilkinson's engine shaft, sinking below the fifteen fathom level, the lode is two and a half feet wide, promising for ore. In the deep adit west, on ditto, the lode is three feet wide, more promising than when last taken down.

S. LEAN. E. JOHNS.

TAMAR SILVER-LEAD MINING COMPANY.

May 26.—In the 145 fathom level the lode is eighteen inches wide, unproductive. In the 135 fathom level the lode is one foot wide, carrying a small branch of ore. In the 125 fathom level the lode is two feet wide, composed of can and ore, saving work. In the 115 fathom level the lode is two and a half feet wide, saving work, though coarse in quality. In the 105 fathom level the lode is fifteen inches wide, rich work. In the ninety-five fathom level the lode is one foot wide, at present poor. The eighty-five and seventy-five fathom levels are suspended for the present, in order to rise a winze to ventilate that part of the mine. In the sixty-five fathom level the lode is three and a half feet wide, interspersed with silver-lead ore. In the fifty-five fathom level the lode is one foot wide, yielding some saving work. We have holed the incline plane shaft to the ninety-five fathom level, and hope, in a few days, to commence drawing tributaries work from that level. In North Tamar at the sixty fathom level, north of the shaft, the lode is one foot wide, at present poor. In the fifty fathom level the lode is two feet wide, saving work, though coarse. In the winze, rising in the back of the forty fathom level, the lode is fifteen inches wide, good saving work. At Wheal Hancock the engine-shaft is sunk fifteen fathoms below the twenty-seven fathom level, the ground is very hard for sinking; in the cross-cut at the twenty-seven fathom level the ground is favourable for driving.

JAMES SPRAGUE.

GREAT WHEAL MARTHA CONSOLIDATED MINES.

May 24.—The ground in the shaft below the 70 fathom level is more favourable for sinking, and the lode has a more chloritic appearance; we shall commence cutting through the north part of it next week. The lode has not been taken down, either at the point of the 60 east or 40 west, since our last report. We continue to extend the levels through the strata, contiguous to the foot-wall, which is soft and decomposing. In the new mine, the lode at the 10 fathom level east continues very large, and we considered it prudent to leave the north and drive on the south part of it, which is composed of munda, with yellow copper ore disseminated throughout. The lode in the western end is uniformly large and regular, containing good stones of ore, with copper, combined with the munda, having the same strongly mineralised appearance peculiar to this lode. It is singular that, while the small quartz veins—taking the lode from the rock on the north wall—contain munda, those on the south, which are granitic, with an excess of quartz (the felspar and mica being decomposed), carries copper pyrites of good quality with no munda. The lode in the winze sinking below this level is at least eight feet wide, consisting almost wholly of quartz, munda, and spots of ore; a promising lode. It may not perhaps be considered improper to call your attention to the following important circumstance:—Thomas's shaft, sunk on the lode at the new mine, is about thirty fathoms south of the line of bearing of the lode at the old mine, which runs 20 deg. south of east, whilst the lode thus far explored west of the said shaft bears 60 deg. north of west and south of east. These facts induce us to assert that they are one and the same lode, and indeed the great length of unexplored ground between both mines, with a probability of the lode turning at one point as well as another, would have justified us in coming to the same conclusion, but for the great difference in their chemical composition. We have minutely examined fragments of the lode taken from the 10 fathom level west at the new mine, as also from the winze sinking below the deep adit, and compared them with fragments taken from the extreme points of the levels in the eastern ground of the old mine, when their ingredients were so very dissimilar that we did not for a moment hesitate in saying they were distinct lodes; but, to prove the truth of this assertion, we commenced surveying the ground, and have subsequently opened on both lodes on the surface, about 100 fathoms west of the new mine. They are twelve fathoms apart, are large, with regular and well-defined walls. The gossan of the south lode contains copper of good quality, and has every appearance of producing a great deal of ore in depth. We propose driving the deep adit north to cut the Wheal Martha lode, during which time the winze must be suspended, as we have not sufficient air to work both places at the same time. We will endeavour, as soon as possible, to ascertain whether the lodes are running parallel with each other at the old mine, as should it be the case, cross-cuts might be extended south, the lode cut into, and opened on at a depth nowhere else attained. The importance of this is self-evident, and needs no further comment from us.

JOHN PRINCE. THOMAS PENALUNA.

MINING IN THE EASTERN DISTRICT OF CORNWALL.

[FROM CORRESPONDENTS.]

WHEAL MOORSHEAD.—Adventurers in this are slow coaches; if there is such an extraordinary lode there, why not try it? Perhaps, there are shares to sell. DRAKE WALLS, after all, is going to move by mortal hands, without the aid of galvanism, and, if properly worked, is sure to do well; every one that knows the mine say as much.

GUNNIS LAKE engine is not yet working—consequently, there cannot be anything to say of their underground prospects.

Of HAWKMOOR the same may be said as of Gunnis Lake.

TRELEIGH CONSOLS.—We have cut two lead lodes of great promise and five copper lodes. Our object is to sink on the south part of the sett on the lead lodes, and drive north and south and cut the copper lodes. We have commenced an engine-shaft. We have forked the water seven fathoms under the north adit, but it is more than can be kept by manual labour; the seven fathom level east and west is producing good stones of copper ore; the lode is about two feet wide—eight inches of it is good saving work.

HARROWBARROW CONSOLS.—We are getting on well with the surface building, smith and carpenter's shop, and material house. We are clearing Hancock's shaft, on Wheal Brothers lode; it is cleared and repaired twenty-two fathoms deep, twelve fathoms under the shallow adit; the lode is larger than the shaft, composed of munda, quartz, and spotted with copper ore. Brewer shaft, on St. Vincent lode, is upwards of five fathoms under adit; the water escapes still somewhere five fathoms deeper through the country; the two latter lodes underlay south, and the Harrowbarrow great copper lodes north—consequently, will form a junction in no great depth.

OLD HARROWBARROW MINE.—We are getting on with the necessary work for heating in a 40-inch combined cylinder engine, which will be on the mine in three months; we have the engine-house, boiler-house, and stack, all complete, and the shaft divided and cased, and footways in complete to bottom, fifty-two fathoms from surface. We are driving the adit east, on St. Vincent lode, at 92 ft. fathom; we carried to quay yesterday about four tons of copper ore from it; we have also about 200 kibles of stuff on the floors to dress, which

will yield a good pile of copper ore. We are also driving on the Wheal Brothers lode; at the ten fathom level east the lode is large, and is yielding good work for silver and silver-lead. We are now dressing a pile of the ore on the Silver Valley floors.

WEST HOLMBUSH.—This mine is situated to the west of Holmbush, and north-west of the Callington Mines, and in costeaning we have cut three east and west lodes, one of which is of great promise, it being a large copper gossan, and from its bearing, and the run of Holmbush lodes, I have no doubt but it is the same.—All persons connected with either of the above mines, are solicited to visit them, and satisfy themselves that the above is correct.

C. B.

IRON TRADE.—We hear that, in consequence of an influx of orders, the Cleator Hematite Iron Company have constructed an extra furnace, and also considerably extended their establishment—the works are situated in the vicinity of Whitehaven.

LEAD MINE IN ALGIERS.—A lead mine has been discovered in the province of Bona, a few leagues from Ghelma. The Arabs brought to the officer in command numerous specimens of the metal, which, in the protoxide form, furnished, by a simple heating in the open air, 250 grammes of metal for a kit and a half of mineral. The working of the mine will, it is understood, be easy; the communication being at hand, and wood and water abundant in the neighbourhood.

SPANISH LEAD TRADE.—Late accounts from Madrid, announce that the Chamber of Deputies had voted a project of law, reducing to one real per quintal the export duty on Spanish lead.

MINING IN IRELAND.—(From a Correspondent.)—As everything connected with the discovery of mineral wealth in the Sister Island becomes interesting, it is with pleasure we are informed of the discovery of some rich deposits of ore (copper and lead), in the neighbourhood of Cork; and the situation of the mines is on the coast, within 100 yards of a good shipping place. The discovery of ore was first made in chinks of the cliffs of rocks, and to a considerable distance near the surface; the spot has been visited by Mr. Daly, of Cork, who describes the matrix as a white stone of a rather soft nature, the flookan also appearing rich, and considers that the first day a pick was used ore of a rich quality would be found. It appears the mines have never been worked; the extent of royalty would not be limited, and there are some excellent streams of water, available for power, running through the property.

WEST CARADON.—The shareholders of the above mine have presented John Allen, Esq., with a splendid refracting telescope, and an aromatic microscope of considerable power, bearing the following inscription, "From the Adventurers in West Caradon Mine, to John Allen, as a token of Gratitude and Respect." Mr. Allen originally possessed, independent of a certain number of shares, 5 per cent. on all the proceeds of the mine, which latter portion of his interest he voluntarily relinquished for a fraction of its value, in consideration of which the company made him this handsome present.—Plymouth Journal.

IMPORTANT DISCOVERY.—We hear that, in prosecuting a search for minerals upon the estate of Sir J. Boswell, Auchinleck, Scotland, the Lugal Iron Company opened out a large seam of plumbago (or black lead), said to be upwards of eight feet thick. This is a curious discovery—the only black lead mine hitherto known in this country, is that at Borrodale, at the head of Derwentwater lake, near Keswick, Cumberland.

SEARCH FOR MINERALS.—The brig *Isla* has been despatched by some spirited capitalists of Aberdeen for Davis's Straits, in search of black lead and other minerals, which are said to abound in that icy region: an experienced mineralogist accompanies her. The *Isla* is also prepared for whaling.

MINING AT THE CAPE.—From South Africa we believe metallic minerals for commercial purposes have never yet been attained, although as much as fifty years ago, in the vicinity of Kroom River, in addition to a slight vein of coal, and an extensive vein of alum of very beautiful structure, perfectly white, of silky lustre, and exhibiting delicate fibres from six to eight inches long, some lead ore was discovered, which now promises to become a valuable article of commerce. Some enterprising individuals have commenced working on this deposit of lead, and are now shipping large quantities at Port Elizabeth, Cape of Good Hope. The ore is a rich galena, producing 50 per cent. of pure lead, and 96 oz. of silver to the ton of ore; the matrix is a quartzose sandstone, fibrous, and easily worked.

NORWEGIAN SILVER.—In the hut where our ablutions were performed we were shown a most beautiful lump of silver, dug out the day before, weighing from 8 lbs. to 10 lbs. Nothing could be more graceful than the frost-like twisted branches into which Nature had wreathed it; when struck with the nail it rang loud and clear like a bell. The largest pieces ever found here were, one weighing 220 lbs., and another which weighed 409 marks, and worth 6000l.—Bremner.

MINE ACCIDENTS.

Countess Pit, Parton.—As J. Holmes was engaged at his work, some metal fell from the roof upon his back, and so injured his spine, that his life is despaired of.—A boy named W. Goulden had his arm broken in the same pit.

Ince, near Wigan.—An explosion lately took place at Mr. Pearson's colliery, by which two men (G. Millington and J. Carter) have lost their lives; the day on which the accident occurred, being the Monday following the reckoning, the men, according to custom, were clearing and repairing the passages in the mine. Carter had proceeded some distance in examining the works, when Millington, who wanted him, incautiously approached with a bare candle, when an explosion took place. Millington died on Tuesday from the injuries he received; Carter was found suffocated in a distant part of the pit—he had taken every precaution, having a safety lamp with him, and having escaped the fire, threw off his coat, and hid his face in it on the ground.—R. Snedley was killed by an explosion at Messrs. Whalley's colliery at this place.

Wheat Tor.—J. Thomas was killed by the machinery in the engine-shaft, Rowley Regis.—A fatal accident happened in Messrs. Bagnall and Jenson's coal-pit, at Tividale, to W. Makin, who was killed by the falling of a quantity of rock from the roof while at his work.

LONDON AND YORK RAILWAY AND COAL TRADE.—Amongst the witnesses examined before the committee, in favour of the projected London and York line, was Mr. Pease, deputy-chairman of the Stockton and Darlington Railway Company, whose evidence was as follows:—"He could raise 2 000 tons of coal per diem, and make about 2 000 tons of coke in the week; but little of either was consumed in the neighbourhood, the greater portion being sent southwards, and thence to all parts of the world, the coke proceeding to a greater distance south, as it was more adapted to the use of locomotives. He had considered the London and York project with great attention, and it was his firm belief that, if it were carried into effect, it would work an entire revolution in the whole coal trade throughout England, both as to the manner of the conveyance, and the cost of the article itself. He believed that the charge of 3d. a ton per mile would be amply remunerative, except in the case of very short distances, and of separate managements, which could not be brought to unite. The witness then stated several instances in which he himself had experienced the evil results arising from rivalry and jealousy, as well as inherent obstacles to which through traffic was exposed by separate companies, as each thought that they were entitled to fix the local charge of conveyance on their own line. There were besides other great practical objections to carrying coal by different companies, which were so insurmountable that, although there was, he believed, every disposition to accommodate him on the lines in question, his wagons were often detained in passing from Durham to Gloucester for ten or eleven days, when they should have gone in one day. He believed that the aggregate traffic in coal would give the company 5 per cent. upon a capital of 25,0000l. per mile for the whole line. He should be glad to sell his coals at 6s. per ton at the pit's mouth, and transmitting it at the above mentioned rate at a mileage, taken as the cross dries, he could deliver it in London for 21s. per ton, whereas it now cost from 28s. to 32s. With respect to coal, he would sell it for the same sum at the pit's mouth, and could deliver it at King's cross, paying the City dues, and defraying the expense of carriage within a circle of six miles, for 11. 4s. 7d. per ton. The formation of the railway would save an enormous amount of coal which was now destroyed at the pit's mouth, that quantity was wasted in the year 1833-34 being 1 300 000 tons. Small coal might if this line passed be carried to London, and sold for 8d. or 9d. per cwt. He had calculated the amount of coal consumed per head per annum by the populations of York, Durham, and Northumberland, and found that it was from 14 to 2 tons and upwards, including men, women, and children; whilst in London, with all the demand of steamers, factories, mills, and manufactories, there was only about one ton per head per annum, one third of the whole amount being required for manufactories &c. He had examined the gradients on the London and York line, and had found them favourable to the passage of coal. He was so far favourable to the line, that, if the proprietors guaranteed to fix their maximum rate for the carriage of coal at 4d. per ton per mile, he would engage, with other parties, to pay the 5 per cent. per annum on their capital; and he would agree to give them from 250,000l. to 300,000l. a year, for the use of their line. The Stockton and Darlington Railway conveyed about 2 000 000 tons of coal annually, and there were no practical difficulties found in that traffic. He had considered the various lines before the committee, solely with a view to the want of a railway running north and south, which it was absolutely necessary to have in the hands of a single company, or, as a colliery, he should be overthrown."

RAILWAY GAZETTE.

RAILWAYS IN INDIA.

The great importance of the subject of forming railways in India has long occupied the attention, not only of parties more immediately connected with that country, but of capitalists here, and we are happy to find the question now brought before the public in a shape which will tend speedily to establish a general railroad system in India, and to open a wide field for improvement and enterprise in that extensive, populous, and important appendage to the Crown of Britain. Impressed with the importance of the subject, and aware of the immense undeveloped resources of British India, Mr. R. Macdonald Stephenson proceeded thither, for the purpose of ascertaining, by actual observation, what would be the difficulties to encounter in carrying out a system of railways in India, the probable working expenses, and the amount of traffic likely to repay the capital expended, &c. The report of that gentleman is now before the public, and is a document of a highly interesting nature. He states, that there is a strong and decided feeling in that country for the early introduction of that system of transport which has so rapidly progressed throughout Europe, while the existence of minerals of the finest quality, and almost indefinite in extent, with the increasing agricultural products of the prolific provinces of the interior, offer the certainty of an abundance of traffic to cover the working expenses, maintenance, &c., and leave a fair dividend for the capital expended in the formation of the lines. Coal-fields, of vast extent and excellent quality, exist in many parts of India, and would continually supply the greatly increasing demand for steamers, factories, &c. An important feature in the formation of railways in India is, that from the level character of a considerable portion of the country, from the absence of any heavy Parliamentary expenses, from the cheapness of labour and materials, and the moderate cost of land, the expense of a railroad in that country will not exceed one-fourth of the amount which would be necessary under similar circumstances here. With respect to the traffic, all the data which can be obtained, bearing on the statistics of the transport of passengers and merchandise, are of a highly encouraging nature. It appears that the imports and exports of Calcutta amount to 16,570,000, the chief portion to and from the interior of the Indian peninsula. The traffic which passed the Jangpore toll, on the Bhagarettee River, was 83,493 tons down, and 95,373 tons up; and passengers 31,950 down, and up 26,428, and opium—an article of large traffic—has not been included in the above. The traffic by land over the Annabud bridge, in one year, was 7742 carriages, of all descriptions; 168,694 bullocks, and other cattle, loaded; 33,180 passengers, in various conveyances; and 435,242 foot passengers. On the Allahabad and Cawnpore road the year's traffic amounted to 107,613 hackeries, or carts; 172,377 camels, bullocks, &c.; 69,720 coolies, employed as carriers; 38,619 carriages, of various descriptions; 122,751 horses, camels, &c., hired for the conveyance of travellers; and 266,052 foot passengers. The sugar alone which passed the north-western frontier, on its way to Calcutta, in the first six months of 1842, was 64,507 tons. There are upwards of 18,000,000 acres of land under cultivation in the north-west provinces, of which 577,035 produce sugar-cane. Between Hoogly and Burdwan the traffic, in one year, amounted to 73,000 foot passengers, 25,080 loaded hackeries, 64,415 loaded bullocks, while the trade in salt alone, between Calcutta and Burdwan, was 12,962 tons, and sugar 18,158 tons; and a carefully-digested estimate has been made, on the most moderate calculation, that the whole trade between the two latter places will amount to 107,310 tons per annum, exclusive of passengers. Some preliminary surveys have been made, and the levels of those portions of lines already ascertained show a gradual inclination of twenty-four inches in the mile. The Court of Directors of the East India Company, having been addressed on the subject, they returned an early reply, from the nature of which it may be inferred that the subject had engrossed their most earnest attention, and that they are alive to the great importance of the introduction of railways into our Indian possessions. In this reply they state, that they have referred the subject for investigation and report to the Governor-General, that an eminent engineer will be sent out from this country, and that no time will be lost in carrying these resolutions into effect. The dispatch to the Governor-General in council embraces a general view of the principles by which any proceedings on the subject should be regulated. It appears that the aspect of affairs in India, with regard to railroads, is directly the reverse of England; in the latter place, by far the greater proportion of the returns are procured from passengers, while in the former, the population being poor, and scattered over an immense tract of country, the principal receipts must be expected from goods' traffic, and as that country abounds in the most valuable products of nature, which only require cheap means of transport to find profitable markets, there is no doubt a large return will be secured. The difficulties which will attend the working and maintenance of railroads, unknown in Europe, have been carefully considered—such as periodical rains and inundations, violent winds, ravages of insects, spontaneous vegetation, the unenclosed and unprotected tracts of country through which they must pass. These difficulties may, however, have been in a considerable degree exaggerated. Public works of centuries old exist in all parts of India, and supply abundant examples, from which to anticipate correctly the effects of the several destructive agencies mentioned, on railway structures. It is, however, the intention to commence with a feasible line, of moderate length, as an experiment for railroad communication in India.

The East India Company having thus boldly grappled with the subject, we find that capital and enterprise will not be wanting to second their endeavours in promoting this important subject. A company is already formed, under the title of the "GREAT INDIAN PENINSULAR RAILWAY COMPANY;" its object being to connect the several Indian Presidencies with each other, and with the nearest point of intercourse with Europe at Bombay: proceedings will not be commenced, excepting all the necessary preliminaries, until after the engineer's report shall have been received from India, when, if the prospects will warrant the progress of the undertaking, it is proposed that the line shall commence at Bombay, ascend the Western Ghats, and pass Ahmednuggur into the valley of the Godavery, thence traversing the plains which skirt that river, it will cross the Manjira, and follow a series of connected and fertile valleys; from near Kummummet take nearly a straight course, till it again crosses the Godavery a few miles above Rajamundry, and thence proceed to its terminus at Coringa; branches will diverge at different points to Candish, Nagpur, Oomrawutty, Calcutta, Sholapoor, and Hyderabad, and the line to be eventually carried on to Ma'tras, the whole length being 1300 miles, and which it is at present estimated can be completed for 6,000,000. The present imperfect mode of transit of merchandise on the backs of oxen, costs 8d. per ton per mile—2d. per ton may therefore safely be charged, while it is calculated that the transit of goods alone, between the coast and the interior, will produce a dividend of 2½ per cent., entirely exclusive of passengers, troops, mails, Government stores, &c. Another company is also projected, under the title of the "EAST INDIAN RAILWAY COMPANY," the object of which is, to be in a position to avail themselves of an arrangement with the East India Company for the formation of a line to be selected by them, should it be clearly ascertained that its execution will prove sufficiently profitable to the shareholders. A line from Calcutta to Mirzapore, as very likely to be the one selected, has been assumed, and estimates made with the greatest care as to the probable cost; the ultimate choice of the particular line to be guided by the results of the survey about to be made by the Bengal Government. It is proposed to raise a capital of 4,000,000, in 80,000 shares, of 50l. each, which, it is supposed, will be sufficient for the construction of such a line. The operations of the company will be under the superintendence of the Bengal Government, and the working will be under the immediate inspection of their officers, and all the arrangements made as nearly as possible analogous to the system adopted by railway companies in England. These are two important and extensive undertakings; and, while we are aware that the great extent of India offers to both companies a sufficiently wide field for enterprise, and the profitable employment of capital, yet, we believe, that it would be to the advantage of all interested, if a union of these projects should take place, and by their united strength reduce the amount of any difficulties to be surmounted, and, at the outset, establish the railway system in India on a firm and secure basis. The difficulties and risk attendant on such an extensive undertaking appears at first sight to be immense, under any ordinary circumstances; such, however, is not the case to the extent which might be feared, and gentlemen who are well acquainted with the various localities, and well capable of forming a correct judgment, have no doubt but they will be readily overcome—while certain of the protection of a powerful local Government, and secured by legislative enactments at home, with all the ameliorating agencies which can be brought to bear upon its success—while the provisional committee will proceed with the most cautious steps at every stage of their progress, the shareholders may rest assured that neither of the undertakings will be carried on unless it should hold out eventually, after proper investigation, those prospects of return, which present calculation seems to render certain.

SUCCESSFUL APPLICATION OF WIRE ROPES IN AMERICA.

We have already recorded evidence of the high appreciation in which wire ropes are held in different parts of the United States, and the successful manner of their working on the Pennsylvania State Railway (crossing the Alleghany mountains) in particular, and now have pleasure in adding further testimony of their acknowledged superiority over those manufactured of hemp, for the service of inclined planes, whether in point of durability, of efficacy, or of economy, as related in an elaborate report of Mr. John Snodgrass, superintendent of the Alleghany Portage Railroad, to the Canal Commissioners of Pennsylvania:—"There are eight planes on the Portage Railroad on which hemp ropes are in use, and two on which wire ropes are placed. The wire rope on plane No. 3 has now been running for more than two seasons; at present it exhibits some evidence of wear; however, this rope laboured under very considerable disadvantage, when first placed on the plane. It being altogether an experiment, it was not supposed that the machinery could be perfected at once. For the two first months, before the introduction of the double-grooved receiving sheave, and while the small iron sheaves were on the plane, the injury to the rope from friction was greater than that sustained ever since; the double-grooved receiving sheave, and small wooden sheaves, having been substituted for those formerly in use, the wear and tear since has been comparatively small. For what length of time it may yet be competent for the service of the plane is somewhat uncertain; yet enough has been already ascertained to establish the fact, that wire ropes are much superior to hemp ropes, owing to their greater durability, and the evident economy of their introduction. The wire rope on plane No. 10, was introduced at the commencement of business last spring; it has been in constant use ever since, and at present presents very little injury from wear and tear. I am inclined to believe that this rope will last for at least three business seasons, and perhaps for a longer period. The principal objection heretofore urged against the substitution of wire ropes for hemp ropes, has been the necessary expense to be incurred in rebuilding foundations of stationary engines. As by the direction of the Board the foundations of the engines at planes Nos. 1 and 6, which, at present, are worked with hemp ropes, will be rebuilt during the present winter; and as the foundation of plane No. 2 was rebuilt last winter, it appears to me advisable to procure wire ropes for said planes. The following calculation of the relative cost of hemp and wire ropes must prove most conclusively the advantage of the introduction of the latter. I take it for granted that a good wire cable will be all sufficient to do the business of any plane on the road for a term of three years—probably much longer. Experience has shown that the average durability of hemp ropes is not more than for one season. The hemp rope now on plane No. 6, weighed 281 pounds to the foot run, which, at 15 cents per pound, makes the cost 4215 cents per foot. Now, Mr. Reibling proposes to furnish a wire rope, made of No. 14½ wire (such as is now on plane No. 10), at 51 cents per foot; or a rope made of No. 10 wire, at 37 cents per foot. Assuming the foregoing data to be correct, it will give the following result:—for 5826 feet of hemp rope, per season, at 15 cents per pound, (\$2,455-65) or, for three seasons, \$7,366-95; for 5826 feet of wire rope (which will most certainly last three seasons), at 51 cents per pound, \$2,971-26—saved by the substitution of wire rope on one plane, \$4,395-69, or \$1,465-23 per annum. There are yet eight planes worked with hemp ropes, requiring 41,779 feet of rope. The foregoing statement shows an annual saving, by the introduction of wire ropes, of \$1,456-23 for every 5826 feet (the length of rope required for plane No. 6), or 25-14 cents per foot. This will give an entire annual saving, by placing wire ropes on the eight remaining planes, of \$10,503-24. One objection heretofore urged against the use of wire ropes on planes, has been the difficulty of attaching cars with safety to the main rope, and also the large number of hemp stops worn out in hitching to it. These objections have been entirely overcome by the substitution of an 'iron stop' invented by John Little, pattern maker in the Johnstown depot. This 'stop' is a most excellent invention, and its adoption in place of the hemp stops will be a safeguard against any accident in consequence of the 'hitch' slipping. There is a decided advantage in passing cars with wire ropes over and above the economy spoken of, and that is the facility with which cars can be passed in wet weather. The double-grooved receiving sheaves afford sufficient adhesion to draw up any amount of burthen to which the stationary engine power is adequate, while, at certain times, the hemp ropes and single-grooved receiving sheaves are almost useless. My judgment approves of the suggestions made in reference to wire ropes, and I am induced to embrace this opportunity of presenting them to the consideration of the Board of Canal Commissioners."

APPLICATION OF CONDENSED AIR AS A MOTIVE POWER.

M. Arago has lately received a communication from M. Triger, informing him of his discovery of a method whereby condensed air may be obtained with greater facility, and applied to various novel and important purposes, the chief adaptation being for the sinking pits or shafts under water or submerged land. It appears from M. Triger's letter, that, being engaged to construct a shaft or pit in the midst of the alluvium of the Loire, he found it impossible—from the soil, which was twenty fathoms deep, and composed almost entirely of sand and pebbles, being penetrated on all sides by the waters of the river, which, for a great portion of the year, covers it with a bed of more than four fathoms water—to employ either the ordinary means of exhaustion, or the method generally adopted in Belgium, consisting of enormous pumps, set in motion by two steam-engines of 200 horse power. Seeing the impracticability of these means of exhaustion, which implied nothing less than an exhaustion of the river itself, the idea struck him of trying condensed air, and, by that power, to compress and remove the waters. Having convinced himself of the feasibility of this idea, he matured all his plans, and, in less than three months, had penetrated through twenty fathoms of soil, and constructed in the sandstone measure, at a depth of twenty-five fathoms, a fastening so solid, that, up to this present time, the well has not once ceased its duty, in emptying the pit; and, although in the very midst of the bed of the Loire, he has been far less hindered by the water than those engaged on land, in wells at the foot of a mountain. As regards the preparation of the compressed air, M. Triger has not considered it necessary to carry the invention to any degree of perfection; but, in a second trial, the results were even more successful, although the well was two fathoms in diameter, and the season very unfavourable, in consequence of the variations in the level of the river; a depth of three fathoms in the solid soil has been attained, and the planking of a shaft constructed, which in a short time will be completed and made to enter the well by the ordinary process.

The new well is of one fathom in interior diameter, and, like the first, is composed of a tube of sheet iron, of twenty fathoms height, whose ends are sunk in the ground by means of a rammer. This tube (constructed by Davis), is similar to that used in the first well, except that it is of greater diameter and has a larger sheet-iron exhauster, and M. Triger proposes to make this exhauster of about 47-244 of an inch for greater security. The sinking of the well presented nothing novel, except, perhaps, the meeting of a small clay bank, filled with small particles of wood, at the depth of sixteen fathoms beneath the soil. The pebbles raised have been, as in the first operation, small portions of granite, yellow chalky flint, and fragments of volcanic rock, which probably have come from Auvergne. The soil on which the tube rests is composed of a free stone quarry, very micaceous and presenting a surface altogether level, although the different banks which constitute this rock are nearly vertical and of very different hardness.

The attention of the Académie des Sciences has been called to this phenomenon. It is, in fact, considered very extraordinary, that the hardness of the rocks has had no influence on the uniform digging of the valley of the Loire, and that the hardest, as the softest, rocks, are raised with exactness and with the same level; and the consequence is, that the ground of this valley, although composed of an alternation of extremely hard, and as equally soft, stone, presents beneath the alluvium a surface as smooth as that of the alluvium itself. Having thus been enabled to prepare a steam-engine of greater power than the former, M. Triger applied himself to effect some changes in the pumps to compress the air; the heat which escapes, in consequence of the condensed air destroying too soon the leatheren plain surface of the suckers, conical suckers of leather have been substituted, and the inconvenience has thereby been wholly obviated, leaving good reason to believe, that this kind of sucker is always preferable for the purpose of obtaining compressed air with pumps of large diameter. With respect to the effect of the compressed air on the organs, a pain in the ears, more or less sensible, is felt during the first stroke of the piston, but this ceases altogether when the mercury in the manometer attains the height of only an inch and a quarter; the temperament of the workmen had a considerable influence on the degree of inconvenience they experienced; drunkenness was a sure means of rendering the pain intolerable, even for many hours after its ordinary effects had passed away. The air sieve being now much larger than originally specified, the workmen concur in

their declaration, that they suffer much less from pains in the ears than formerly, but much more from cold, occasioned from the stoppage and rush of air. This detention causes a mist, extremely cold, and denser in proportion as the size of the box is greater. After having spent seven consecutive hours in the compressed air, the workmen find the pain very acute for half an hour after their return from the pit, but a few simple remedies speedily remove this inconvenience. In conclusion, M. Triger mentions the different applications to which the compressed air may be made efficacious. Since his first operation, he has given the subject the most anxious consideration, and has recognised the following purposes to which this vast and important agent may be applied:—

1. One of the most useful and easy, will, without dispute, be its employment, as a means for constructing the piles of bridges; as applied as the inventor proposes, it will serve to sink in the beds of rivers, and in rivers themselves, piles of a bridge, with as much economy and facility as if built on a rock in the open air; the only expense for this being the first outlay in the necessary preparation, and a steam-engine of about ten-horse power.
2. By these means, one can visit and move about at the depth of many fathoms, at the bottom of a river, in search of treasure or any precious article.
3. Compressed air may, moreover, serve to render vessels incapable of being swamped or submerged, in conveniently placing the last bridge. The hold may thus be aired, and emptied of water, as occasion may require. By the compression of atmospheric air, a leak may be more easily stopped, and by enabling any one to go down into the interior, the necessary repairs may be effected on all parts of the hold.
4. The construction of tunnels, and the saving of the exhausting space, may be greatly facilitated by this adaptation.
5. Lastly, compressed air may, in almost all cases, replace exhausting pumps; and it may here be observed, that with air at the pressure of a half atmosphere, M. Triger has established during many days a continuous jet of water at the surface, and that this water would shoot up from the bottom of a well, twenty-four fathoms deep.

NEPSOM AND CROYDON ATMOSPHERIC RAILWAY.—The works on this line are proceeding with great activity, and cause much attention among persons who take an interest in this principle of propulsion. A number of labourers are employed in the necessary earthworks, laying the tubes, rails, &c., and in some parts of the line the works have assumed an important and forward appearance. The telegraph is completed for several miles; and, at the spot at Anerley, where it will cross the South-Eastern line by an incline and viaduct, a large extent of piles have been driven for the foundations. Near the Dartmouth Arms Station a noble engine-house is being erected, intended to contain six enormous boilers, from the works of Messrs. Maudslay and Field, each weighing fourteen tons, covered with an elegant iron roof, the chimney of which will be 120 feet high, and is of very unique design. The directors, in these operations, have shown a degree of activity not always witnessed in large undertakings, and evince a very laudable desire to give effect to the opportunities placed within their reach, for testing, to its full extent, the capabilities of this enormous power, which Nature has placed at the command of man. The length of the line, its gradients, and its situation, so contiguous to the metropolis, render it most peculiarly adapted for a definitive trial of the pneumatic principle, as it progresses it excites much interest, and an early opening is anxiously looked for by the scientific world, and the various parties interested.

CANAL AND RAILWAY UNION.—(From a Correspondent.)—We hear it is in contemplation by the Birmingham and Liverpool Junction, and Ellesmere and Chester Canal Company, to lay a line of rail along their canal, and, if carried out, it will make their property one of the best investments in the kingdom. They have proved the superiority of steam tugs for towing boats; it now only remains for them to complete their work, by laying down a line of rails on the whole of their towing paths, and, no doubt, the Shrewsbury and Montgomeryshire Canal Companies would also promote the scheme—a connection would be easily formed at Chester with Holyhead, and short branches would connect them with the Manchester and Birmingham and Trent Valley line.

SPANISH RAILROADS.—*El Tiempo* of the 10th instant publishes a list of the projected railroads through Spain, for the construction of which offers had been made to the Spanish Government, or which have been actually conceded. They made are five in number—namely, 1st, the line from Madrid to Aviles, passing through Valladolid and Leon, already conceded to an English company, represented by Mr. Richard Kelly. The proposed embranchments to that line are:—1st, from Valladolid to Santander, through Palencia and Alar, conceded to the Marquis de Remisa; 2d, from Palencia to Burgos, Vittoria, and Bayona, for which offers have been made by a French company; 3d, from Burgos to Bilbao, through Ona, Medina de Pomar, and Balmaseda; 4th, from Páncorvo to Logrono and Tudela, and from Páncorvo or Cubo to the Canal of Castile, in order to unite the latter with that of Aragon, recommended by the authorities of Bilbao; 5th, from Valladolid to Zamora and Salamanca, and to the frontier of Portugal; 6th, from Valladolid, through the valley of the Douro, to Almazan, Ariza, and the line from Madrid to Saragossa; 7th, from Leon to Galicia—the last three have been proposed for by an English company. Second line, from Madrid, through Saragossa to Barcelona, conceded to a respectable English company. Embranchments—1st, from Saragossa, through Tudela and Pampluna, to the French frontier, conceded to the same company; 2d, from Saragossa, through Teruel to Valencia, demanded by a Spanish company; and 3d, from Lerida to Tarragona. Third line, from Madrid to Alicante, for which propositions have been made by a Spanish company. Embranchments—1st, from Aranjuez to Toledo, and from Aranjuez to Tarazona and Cuenca; 2d, from the neighbourhood of Villena to Fuente la Higuera, Jativa, Alcala, and Valencia—bid for by a Spanish house; 3d, from Villena to Murcia and Carthagena. Fourth line, from Madrid, or Aranjuez, to Cadix, bid for by a Belgian company. Embranchments—1st, from Baen to Granada and Almeria; 2d, from Cordova to Malaga; 3d, from Cordova to Merida; 4th, from Ezja to Algeiras; and 5th, from Seville to Huesca and the frontier of Portugal. Fifth line, from Madrid to Badajoz, bid for by an English company. Embranchments—1st, from Badajoz to Seville; 2d, from the bridge of Almaraz, through Placencia and Caidal Rodrigo to Salamanca; 3d, from Merida to Guidal Real and Abacoete, where it will join the Madrid and Alicante line.

REVIEWS.

The Quarterly Journal of the Geological Society. London: Longman and Co.

Our geological readers are aware that the form of publication of the transactions of the society has hitherto been the quarto size, and at irregular periods; to the continuance of this there were several objections—the principal of which was, that, from the great influx of original matter, sufficient expedition was not attained in its publication; and, also, that the adoption of an octavo publication would be more commensurate with the funds of the society; and, with the view of removing these objections, the council determined on an entire alteration of the system. The first Number of *The Quarterly Journal of the Geological Society* accordingly appeared in February last, which we have now before us, together with the May Number, and the publication is to be continued in this form, unless it should be judged necessary, in any particular cases, to introduce the volume in the original quarto size. The journal now consists of two parts—the first being a full report of the original communications read before the meetings of the society, the authors being held responsible for the facts and opinions stated; and the second, consisting of translations or abstracts of geological papers published in foreign or English publications, the announcement of geological discoveries, and other information of a mixed character. We thus have the transactions of this society placed before us in a new shape, and one which possesses many advantages—while the nature of the contents and their arrangement evince the greatest care in the choice of subjects on the part of the talented vice-secretary (by whom the work is edited), who, from his well known attainments in this field of science, is so eminently calculated to advance the interests of the society by rendering its publications interesting from their sterling merit, and the aid which they may be made to afford to geological research. In the first number is an interesting paper "On the Geology of Nova Scotia," by J. W. Dawson, Esq., with a geological map by Dr. Gesner. The strata consists principally of the primitive rocks, the old red sandstone, and gneiss formations covered by the coal measures; these coal fields are of considerable extent, and will probably at some future time be highly important in a commercial point of view to the inhabitants of N. S. North America. From a report by Prof. E. Forbes, F.R.S., the number of lower greenstone fossils at present in the cabinets of the society, and of which a catalogue is given in the May number, consists of 161 species of mollusca, of which eighty-two are lamellibranchiate bivalves, twelve brachiopoda, twenty-three gastropoda, and fourteen cephalopoda, while of radiata, from the same formation, there are about twelve species of polyparia and amorphous, nine echinodermata, eight or nine species of annelida, and several crustacea—additions to this part of the collection are very desirable, particularly the echinodermata. The most cellaneous part of this number consists principally of geological memoirs read before the societies of France, Belgium, Academy of Science of Berlin, the Royal Society, &c. The number for the present month contains a variety of interesting subjects; the most important of which is a paper "On the Geology of the Gulf of Smyrna," by Louis F. Spratt, R.N., and "On the section between Black Gang Chain and Atherfield point in the Isle of Wight, in the lower green sand," by Capt. Ibbetson and Prof. Forbes. This paper contains a description of the strata, its grouping, chemical peculiarities of the beds, indications of the conditions under which the beds were deposited, with the regular distribution of the fossils throughout the strata, and which forms a very useful standard of reference for the study of this very interesting formation.

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